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LOCATION OF SOUTH AFRICA AND ITS ECONOMIC CONSEQUENCES

C. F. Hugo

THE location of anything means its position with reference to other things, whether in the world of concrete objects or in the arrangement of the possessions of the mind. The geographic location of a country signifies its position with reference to other countries or areas—its position in space, therefore, or its space relations.

indirect, may be vicinal or far distant, but the direction and mode of contact remains important, and whether they are centrifugal or centripetal the stronger and more numerous such relations of one area are to other areas the more will that one area stand out in importance, relative to the others.

In the world of commercial, politi-



FIGURE 1.—Cape Town, although exposed to the Westerlies, has one of the two best harbors in South Africa, and shares the shipping honors with Durban. It has the advantage over Durban in that it lies almost directly on the important ocean highway rounding South Africa. (Courtesy of South African Railways and Harbors.)

This location, however, cannot be considered otherwise than in relation to the contents of these areas, and as nothing on earth is without influence, so will these areas influence one another whether for better or for worse. The location then implies inter-relation of influences or forces which may repel or attract, may be direct or

cal, and social contacts between areas or places it often happens that the location becomes the all-important geographic factor in comparison to which all others are insignificant, being in many cases the *sine qua non* of a place—the factor to which it owes its very existence. Such was the case with the first colony established



FIGURE 2.—On the rolling plains of the Transvaal Highveldt, grazing was one of the earliest industries practiced. Improved breeds of cattle and sheep have increased the produce of that industry, both for export and for local consumption. (Courtesy of South African Railways and Harbors.)

by Jan van Riebeeck at the Cape in 1652, and the subsequent policy of its founders showed only too clearly that the colony existed only by virtue of its location on the shortest sea route to the Far East.

The human importance which attaches to the location is determined largely by nature, but varies with man's activities and, generally speaking, the more important the contents of an area the less subject to fluctuations will the importance be which results from its location.

In the early days of the Cape settlement its favorable location served as a means to an end—to promote trade with the Far East—but when the cutting of the Suez Canal threatened to detract from this importance the human activities in the interior of South Africa, especially the opening up of the diamond fields and increased farming activities, gave a new lease of life to the Cape and no decrease is noticeable in the trade as is shown in the following values of imports and exports through Cape and Natal ports:

<i>Years</i>	<i>Pounds Sterling</i>
1855-1859.....	3,964,094
1860-1864.....	5,344,237
1865-1869.....	5,036,869
1870-1874.....	10,022,660
1875-1879.....	13,706,646

In the years 1865-69 diamonds appear in the exports for the first time and to the value of £5,093. In the next period, 1870-74, gold appears for the first time and to the value of £3,129, and diamonds £1,027,334. It is especially in this latter period that one would have expected the detrimental influence of the opening of Suez on the trade via the Cape, but at this time, fortunately, the country became important for its own sake and not only on account of its location on the sea route. From having a purely intermediary location between East and West, the Union of South Africa came into its more natural function, viz. that, from the point of view of the northern hemisphere, of a marginal location.

This land, once far away to the European, has, however, as regards civilization and economic development, become the most advanced portion of the African continent. Here is the largest area of the essentially tropical continent having a climate suitable for permanent European settlement. No wonder that out of a total of $3\frac{1}{2}$ million whites for the whole, including the surrounding islands, the Union of South Africa has $1\frac{3}{4}$ millions, that is half the

total on only 7 per cent of the area. The possible permanent settlement of this white population is due to the zonal location or location in latitude which, of course, is of primary importance in determining the type of climate.

Important in this connection also is the altitudinal location.

A full discussion of the economic effects resulting from climate would lead too far into details and only a few significant facts will be touched upon.

THE ZONAL LOCATION

Situated between latitudes 22° S. and 35° S. the Union of South Africa lies in the shifting zone between the Westerlies and the Trades with the result that the southwestern Cape has a Mediterranean type of climate similar to that of central California.

Most of the country, however, receives its summer rains from the Southeast Trades coming across the warm Indian Ocean, and in this connection the existence of a warm ocean current on the east coast greatly increases the high temperatures and rainfall on the east. The influence of the highest mountain ranges near and parallel to the east coast further helps to exaggerate the disparity between east and west, and the rainfall decreases rapidly from east to west.

The country does not extend sufficiently far south to be under the influence of the Westerlies all the year round, but a third hyetal region in the south, in the Humansdorp, Alexandria, districts can be distinguished where rain, brought alternately by the Westerlies and the Trades, falls more or less at all seasons. Here, then, is a small patch of true forest, a not inconsiderable asset in a country so significantly lacking in natural forest. Most of

the summer-rainfall area is grassland and suitable for stock raising and in its moister eastern parts more suitable for cereals, especially maize.

As the country lies on the edge of the tropical high-pressure belt the average rainfall is low, and approximately half the Union has a rainfall of 20 inches and less. As a whole, then, the summer-rainfall area is more suitable for stock raising than for agriculture because in this area agriculture without irrigation is generally unprofitable where the amount of rainfall is less than 20 inches. In the winter-rainfall area this minimum limit is about 10 inches.



FIGURE 3.—South Africa competes with Anatolia for leadership in the world's production of mohair. Large herds of Angora goats are common. (Courtesy of South African Railways and Harbors.)

The zonal location of the Union corresponds to that of the northern Sahara, central Arabia, northern India and the Cotton Belt of the United States, but its climate is not as hot as one would expect from this latitudinal location. The temperatures do not correspond with those of the Sahara or Arabia but with that of central France, e.g., the temperature for the hottest month at Capetown is about 70° F.—a temperature which



FIGURE 4.—Diamonds first appeared in exports in 1865-69. Natives still secure some diamonds from alluvial diggings though the large syndicates control the industry. Water is scarce and must be carried to the washing outfit in tin cans. (Courtesy of South African Railways and Harbors.)

is more or less the same as that of New York and central France. This condition is rather important for it means that the Huguenots from France found here temperature conditions similar to those to which they were accustomed at home, and could at once proceed with their accustomed type of agriculture.

The climatic disparity between the northern and southern parts of the African continent is reflected in the better development of desert conditions in the north:

1. The southern portion of the continent, as compared to the northern, is peninsular in form, and oceanic conditions exert a greater influence in the interior.

2. In general the southern hemisphere is cooler than the northern owing to the greater extent of ocean in the south.

3. The earth is in perihelion in the southern summer and consequently the northern summer will be longer than the southern.

4. A very important influence on temperature is exercised by the altitudinal location of South Africa.

In the less than 1,000-mile railway

journey from Capetown to Johannesburg the land rises to 6,000 feet and, although Johannesburg lies some 8° of latitude nearer the equator its average annual temperature is even less than that of Capetown and it is one of the healthiest places for Europeans in the Union. Again, Johannesburg and Lourenço Marques lie in more or less the same latitude, and in the latter place, with true tropical climate, malaria was so bad that the old Dutch settlement practically died out in one year and the project was ultimately abandoned.

The low-lying parts of northern and eastern Transvaal, Natal, and



FIGURE 5.—The Premier diamond mine, 20 miles from Pretoria, showing the two open pits connected by a cutting. The hard quartzites permit deep, open-pit methods of mining. (Courtesy of South African Railways and Harbors.)



FIGURE 6.—Gold mining in South Africa yields about half the world's total gold supply. This plant is in the Witwatersrand area around Johannesburg. (Courtesy of South African Railways and Harbors.)

Zululand are certainly tropical in character and the consequent tropical diseases have certainly undermined economic efficiency, but these territories are being cleared and cultivated and the diseases receive due attention. Owing, then, to the very fortunate combination of favorable factors such as high altitude and peninsular projection into the southern oceans, the Union of South Africa is par excellence the area for white settlement of this otherwise most tropical of continents, with the result that it is also economically the most advanced and most industrialized portion.

OCEANIC VICINAL LOCATION

Two ocean currents are of importance to the Union of South Africa. Along the east coast the warm Agulhas current flows south and is partly responsible for the high temperatures and rainfall of the eastern part of the country.

On the west the cold Benguela current flows north and causes low temperatures, low humidity, and dangerous fogs off the coast. It

gives to South Africa, however, its rich fish-crop, for the micro-plankton on which the fish feed flourish better in cold than in warm water. Also the colder waters have a stricter selective effect on life than the warm, and consequently the numbers of species are fewer, a fact which facilitates economic exploitation.

On these fish of the west coast feed the millions of seabirds which supply guano fertilizer to the value of some £80,000 annually. Professor Claas-seus estimates the number of these birds at 40 million and draws the interesting conclusion that even if each bird consumes as little as two pounds of fish per day the total annual consumption amounts to $14\frac{1}{2}$ million tons, which is more than all the fish caught by man in the whole world.

It is off the southwest coast that the warm and cold waters of these two currents meet and mix, causing not only much fog, but also being partly responsible for the turbulent nature of the sea which has earned for the Cape the old name of Cape of

Storms. According to Professor Serton no less than 2,000 people lost their lives by shipwrecks in Table Bay during the first two centuries of occupation—an appreciable number if one considers the relatively small number of ships which at that time passed the Cape. The harbor of Table Bay lies exposed to the West-erlies and was so bad during the winter months that ships were ordered to enter the subsidiary, Simonsbay, during those months instead of the main bay. As a result of this unfortunate location a breakwater had to be constructed at great expense. And yet this bay was chosen by the Dutch as the “half-

Batavia. But with the old sailing vessel, which reckoned not in miles but in time, the difference is even greater. Time was the factor which was important for the health of the crew regarding their need for fresh food and water. The average time taken was $2\frac{1}{2}$ to $2\frac{3}{4}$ months from Batavia to the Cape and 4 months from Holland to the Cape. So, for instance, van Riebeeck's son, in 1676, sailed from Enkhuizen (Holland) to Table Bay in 122 days and thence to Batavia in 69 days.

If time or distance and fresh food alone were considered, then St. Helena was far more favorably located and the island position would



FIGURE 7.—Mt. Aux Sources, the highest mountain in South Africa, belongs to the relatively high mountain chain which is partly responsible for the heavy rainfall on the eastern coast, moisture being brought by the Southeast Trades. (Courtesy of South African Railways and Harbors.)

way” refreshment station to Batavia. The reasons for this choice are fully set out by Professor Serton in “Die Huisgenoot.”

Apart from the dangers to shipping the Cape was not at all half-way. The distance along the ordinary route taken by the modern steamer is 6,320 nautical miles between Amsterdam and Capetown and 5,240 nautical miles between Capetown and

have suited the trading company better and they would thereby have avoided conflict with the natives on the mainland. That Table Bay and not St. Helena was finally chosen is due to the wind systems which determined the course of the sailing vessels, and it was only at the Cape that the outward and homeward routes crossed each other. The outward route lay near the east coast of

South America as far south as La Plata and then eastward with the Westerlies; that is, too far south to touch at St. Helena without considerable trouble in having to sail in the teeth of the Southeast Trade winds.

The Portuguese again had established their stations on the coast of Mozambique not only because their goal was Nearer India, but also because it was only on the East coast that they could obtain ivory, both white and black (slaves), and their first contact with the natives at the Cape was a not too pleasant reception.

The location on the highway of trade combined with the policy of the Company caused the people to devote themselves to trade only, and agriculture and stockraising were undertaken only in so far as they facilitated this trade. Among the colonists there were those, however, who wished to make their homes in the new country, and gradually expansion went inland. The conflict between these two policies led to much friction and often individual hardships, but the latter policy prevailed and received a great impetus with the opening of Suez, when more and more people turned their eyes to the development of their own country, thereby partly healing the gap which had come into being between the trading towns-people and the colonist farmers.

The settlement of Table Bay had then come into existence and had continued its existence purely by virtue of its location. The poorest of the three ocean fronts, the Atlantic, dominated the history of the country for almost two centuries. The eastern or Indian front has, however, asserted itself since the middle of the 19th century and for the future promises to become entirely domi-



FIGURE 8.—Moisture is scarce in the arid Karroo and dams are placed at advantageous points to conserve the little rain that falls. (Courtesy of South African Railways and Harbors.)

nant, both economically and politically.

How the economic center of gravity has shifted from the Atlantic toward the Indian front is reflected in the tonnage of vessels entered at the various ports. In the Official Yearbook of the Union of South Africa the Natal ports appear in the statistics for the first time in 1860-64 with a tonnage of 26,000, the Cape ports in the same period having an average of 328,000 tons. By 1909 Natal ports handled 2,579,000 tons and Cape ports 11,239,000 tons. In this connection it must be remembered: (a) that some ports included under the Cape really belong geographically to the Indian front, e.g., East London, (b) that each vessel

therefore is often registered twice on entrance to the port. This fact acts in favor of the Cape ports because many vessels, notably the Australian ships, do not touch at Durban, and more vessels are likely to be registered twice at Cape ports than at Natal ports.

Since 1910 figures are available for the individual ports, but it will suffice to take only Capetown and Durban as the two leading ports on the two ocean fronts.

TOTAL TONNAGE OF SHIPS ENTERING		
Year	Capetown	Durban
1910.....	2,911,000	4,221,000
1920.....	3,337,000	3,244,000
1929.....	4,136,000	4,754,000

000 tons of the total of 1,746,000 tons of coal bunkered. Similarly, Capetown lies more than twice as far from the chief maize producing area and yet exports a fair amount of that product. This is due to the fact that the Union exports maize to Australia and many Australian vessels do not call at Durban but steam eastward in about 40° latitude. To touch at Durban and get cheaper coal and maize would therefore mean a longer voyage and also sailing against the Agulhas current. The railways offer a special tariff for shipping maize and coal to Capetown in order to meet the difficulty of a longer rail haul.

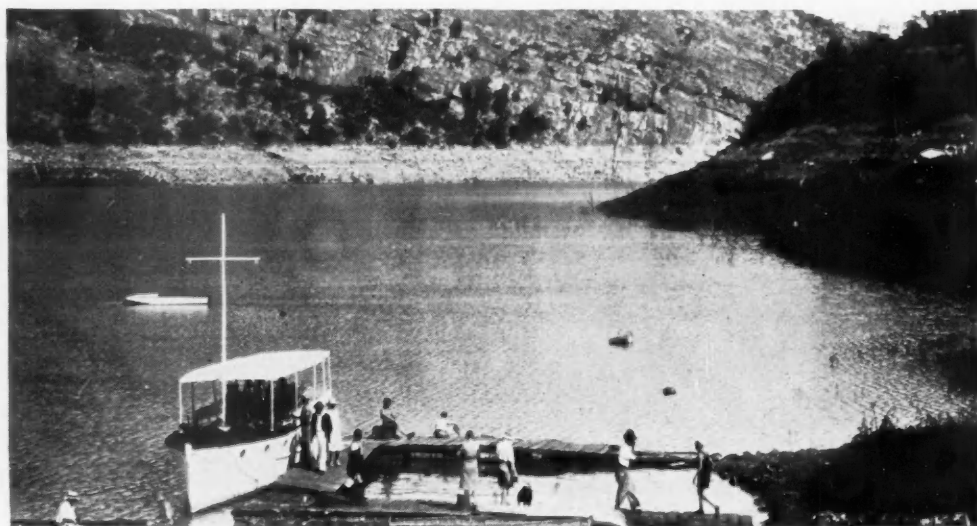


FIGURE 9.—The Haartebustepoont Dam, some 30 miles from Pretoria, is the largest irrigation dam in the country. (Courtesy of South African Railways and Harbors.)

Most striking is the fact that of the total cargo, except livestock, dealt with in 1929–30, Durban had 5,349,519 tons and Capetown only 1,812,074 tons.

Nevertheless, Capetown has a favorable position as a port of call, and although it lies some 1,000 miles by rail from the nearest coalfield while Durban is less than 300 miles, Capetown gets 240,000 and Durban 1,205,-

Nevertheless the Indian front has superseded the Atlantic in importance. The eastern portion of the country is economically far more important than the western. The Union extends over about 16 degrees of longitude. If now the middle meridian of 24° E. is taken as the dividing line the eastern half has the better agricultural conditions owing to higher rainfall. Generalizing, one may say

that the eastern half has all the maize, all the wattle bark, all the citrus fruit, all the sugar, most of the wool and cattle, all the coal, all the gold, and until recently almost all the diamonds, and the greater economic importance of the East is reflected in the much closer meshes of the railway-net. Although, then, most of the country's trade is still with countries on the Atlantic Ocean the Indian relations will become more and more important. Already the Union imports from this direction sugar (Mauritius), gunnybags (India), timber (Australia and Japan) and is devoting increased attention to the wool crop of a country which lies nearer to her than the Argentine.

That closer trade relations do not yet exist is partly due to the fact that most of the countries around the Indian Ocean are primary producers like South Africa. The neighboring islands are of minor importance. A fairer trade exists with the smaller and farther removed Mauritius than with the much larger and nearer Madagascar because France has followed a fairly strict protectionistic policy in the trade with her colonies.

A favorable factor in her location is the fact that South Africa is the only coal producing area within a radius of at least 1,000 miles. Nearest to her is the South Polar Continent some 2,200 miles, Argentine over 3,000 miles, India 4,000, and Australia 5,000 miles.

Most of the country's trade is with those countries lying farthest from her, viz. Western Europe and North America, while her neighbors on land, Rhodesia, Portuguese East Africa, and others, have only between 6 and 7 per cent of her trade.

CONTINENTAL VICINAL LOCATION

The Union of South Africa forms part of the African continent and yet in its cultural, political, and economic development it differs from the rest of the continent and is much like an island. The country was always isolated from the old hearth in Europe because of the great distance overseas and because so much of the rest of the continent is not suitable to white settlement. Such settlements might have formed a series of links overland with Europe. Apart from the unfavorable climate of central Africa



FIGURE 10.—The red Afrikaner oxen are typical of South Africa and are the principal beasts of burden. Each plow requires seven yoke and three yoke are used to pull an ordinary load of hay. (Courtesy of South African Railways and Harbors.)



FIGURE 11.—Much manual labor is employed in the cultivation of the grain and vegetable crops. Native women do most of this work in the vicinity of the mines where the men are employed. (Courtesy of South African Railways and Harbors.)

with its equatorial forests and diseases, and of the barrier of the greatest desert on earth, it must be remembered that the whole of northern Africa is in the hands of a civilization hostile to that of the south. Racially the rest of the continent differs from the Union.

The Union is further isolated by the headward erosion of the Limpopo and Zambesi rivers, which have created fever-infested lowlands as projections into the plateau which, with their dense bush and marshes, form barriers to movement north and south. It is noticeable how the similarly isolated plateau of southern Rhodesia has found its railway outlet far to the west on the edge of the arid Kalahari semi-desert.

Such isolation is favorable for military safety. It also promotes

social and political independence of thought and development except when the population lives in a very low stage of culture.

By virtue of its location the Union was, and is, part of the Old World and, therefore, has had the advantage of being able to share in the cultural possessions of the North. Compare this to Australia, where the isolation is more complete, and where there were no domestic animals nor agriculture which could be of value to the European colonists when they arrived on the scene.

In Africa, on the other hand, such influences could enter from the North. Throughout the continent such influences made themselves felt in the competition between the various races. The equatorial forest does not extend across the continent, and the grasslands of East Africa form a passageway for relatively easy move-



FIGURE 12.—Corn is the second most important agricultural export product. In favorable years excellent crops are raised. (Courtesy of South African Railways and Harbors.)

ment southward. The stronger races forced the weaker out of existence—directly and indirectly—or caused them to retreat into the undesirable forests, deserts, or mountains. In the retreat towards the south the narrowing of the funnel gave less and less room and here in the thin end of the continent the final struggle was fought out. The whites were just in time to witness this final phase of the contest between Bantu, Bushman, and Hottentot. The competition of races meant that the stronger ones were finally left in possession of the land, and whereas the European in Australia had practically no opposition, every advance in South Africa was fiercely opposed by strong, virile people who had brought with them the knowledge of ironwork (spears). And, thanks to the country's location on the Indian Ocean with its monsoons, the Arabs on the east coast had been instrumental in indirectly making this opposition the more severe by their slave-raiding and other activities.

Although the military opposition was strong these remaining strong



FIGURE 14.—On the more favorable warm, moist coast of Natal much sugar cane is grown, though the sugar supply has to be augmented by imports from Mauritius to meet the needs of the local demand. (Courtesy of South African Railways and Harbors.)

survivals of native races were the more useful as laborers as contrasted to the weaklings of Australia. The importance of this labor force to the Union may be judged from the fact that gold mines, which in Australia would be unprofitable to work, show good profits in South Africa—the labor being one of the reasons why South Africa produces half the world's output of gold.

Again, South Africa exports maize to Australia which has more land in the north suitable for this product, but it is not produced because Australia has not the black labor force suited to tropical conditions.

South Africa's location with reference to the whole continent, and therefore the Old World, meant that the natives were in possession of such cultural possessions as cattle and sheep. These the colonist could directly barter from the native without having to get everything from Europe as did the colonists in Australia. This again meant that the native, being accustomed to work with ani-



FIGURE 13.—A swarm of locusts, one of the chief pests to the cereal crops of South Africa. (Courtesy of South African Railways and Harbors.)



FIGURE 15.—Large quantities of peanuts (ground nuts) are grown in the loose fertile soil of the southern upland, but before export the stalks must be removed. They supply much of the oils and fats in the diet of the natives. (Courtesy of South African Railways and Harbors.)

mals, could more easily be used as a shepherd and farm laborer.

As has already been pointed out, the Union at present has very little trade with the rest of the continent, but location gives her great opportunities in this respect. Considered from the geographic point of view, trade is based on such factors as differences of climate and its consequences, differences of mineral resources, differences of industrial development, and differences of race

and density of population. All these factors seem to favor trade between the Union of South Africa and the tropical regions north of her.

The Union is the largest coal producer on the continent, has any amount of iron ore, and a temperate climate suitable for both black and white factory labor. The whole tropical continent is awaiting exploitation and is in possession of a large native population which can and are producing the tropical raw materials



FIGURE 16.—The Mediterranean climate has made possible the exploitation of much of the Cape region by citrus fruit growers, who have the distinct advantage of being on one of the world's great ocean highways. This is Zebediela, near Potgietersrust, one of the largest citrus estates in the world. (Courtesy of South African Railways and Harbors.)

of industry, at the same time forming a potential market for the products of the factory. To this market the Union is closer than any other industrial region.

In the competition for the trade of these areas the Union is favored by the plateau character of the country for movement and construction of railways are easy over the plateau grasslands, whereas such advance from the coasts over fever-infested lowlands and up the steep outer edges of the plateau escarpments is difficult and costly, especially in view of the smooth coastline, lack of navigable

rivers, and great distances between coast and interior.

That the above mentioned reciprocity of trade is already in operation is clearly shown by the exports and imports. The Union imports from Rhodesia, Portuguese East Africa, Kenya, and Belgian Congo such raw materials of industry as unmanufactured tobacco, wood, bar gold, sugar, raw coffee, copra, and other oil seeds, and exports such manufactured products as confectionery and other foods and drinks (beer), candles and soap, cigarettes and cigars, carriages and carts, and gold coin.

RUMANIA TO-DAY

M. Catherine Roberts

RUMANIA, renowned in song and story for the exploits of her romantic shepherds and vagrant gypsies, seems to face a brighter and more promising future than do the rest of the other newer states of postwar Europe.

Since the war her area has doubled and her population has more than doubled. Her increased domains with their added resources and peoples have compelled a radical change in her political and economic policies and organization. The recently created states of east-central Europe are turning to her for patterns of successful land and industrial systems. Her great resources, potential and exploited, insure her a place of strength and influence in Europe, if only her political leaders guide her wisely and well.

Instead of forming her western border, the Carpathians and Transylvanian Alps constitute the elevated center of her land and her economic life. Their main ridges follow a crude crescent with Transylvania lying between the horns, and the plains of the Danube and the Dniester shaping the basal periphery. The ranges rise to 8,700 feet in their northernmost extension. The elevations diminish southward. The central portion of the crescent sinks lowest. Westward from the gorge of Prahova, just south of Brasov the peaks of the Transylvanian Alps attain ever greater heights as far as Banat.

At no place do the mountains raise such a formidable barrier to vegeta-

tion, travel, and movement of peoples as have the Swiss Alps throughout history. A number of passes easily traversed, connect Transylvania with the plains eastward and southward. Five main railways now pierce the ridges of the crescent.

A ridge of hills, usually designated the foothills, parallels the main Carpathian ranges some distance eastward, and two parallel ridges of ancient crystalline cores fringe the central massif southward. These lower ridges have played an important part in developing Rumania's present economy.

The unevenness finally becomes monotonously level as the Quaternary sediments of the Danubian plain completely bury the eastern foothills. North of the mouth of the Danube, in Moldavia and Bessarabia, the broad hilly spurs of the eastern extension of the foothills nearly reach the Dniester. Several south flowing rivers, each meandering through a shallow, flat, marshy valley interrupt the broad level tracts of land. Lying between the Danube and the Black Sea is Dobrudja, the northern part of which is mountainous. Distinctly separated from the Carpathians, North Dobrudja seems to be an overthrust of the same primary mass as the Crimean peninsula. In the southern portion of the province the limestone maintains a plateau region. Elevations in all parts of Dobrudja do not reach above 1,700 feet.

To the west of the Carpathian arc is an uneven depressed region of

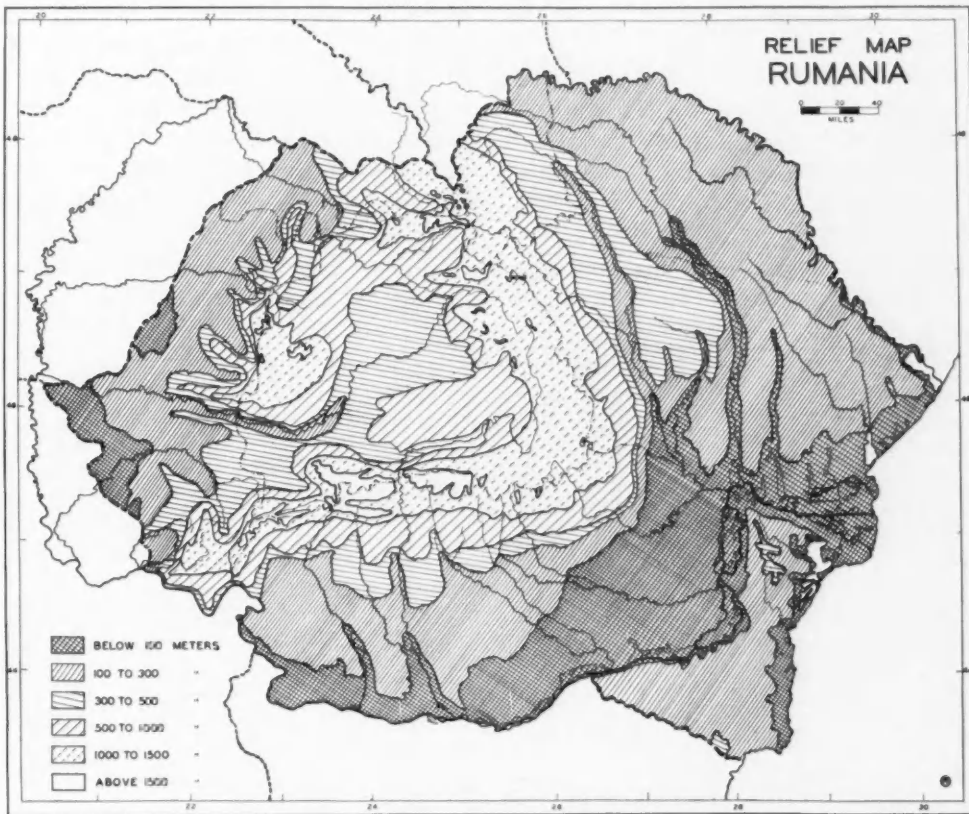


FIGURE 1.—Rumania is rich in variety of topography which gives rise in turn to a diversified economy basically essential to the development of a sound economic state.

numerous and separated basins, ridges, and deep valleys. The Bihor block separates this region from the narrow but fertile plains of the Theiss. Around the borders of the Bihor flourish several concentrated areas of activity. The southwestern part of the western plain has come to be known as "The Banat."

Of the Rumanian rivers the Danube far surpasses any other in economic importance. It acts as the main artery of export. The Danube from its source flows 1,800 miles before it joins the sea; for over half of the distance it serves as an artery of travel. The Danube forms the south and southwestern boundary of Rumania for many miles. Bor-

dered as it is by marshes in its lower course few river ports dot its banks and the distinct marsh barrier makes the river an effective political boundary between the Rumanian territory and the countries on the south bank. The only ports are at points where the river proper touches the firm land of the plain, as at Giurgiu. Hence the exports of the country concentrate at a small number of ports. The streams of Moldavia and Transylvania are swift mountain torrents while those of southern Moldavia and Bessarabia are much more leisurely flowing and resemble the Danube in that their courses are flanked by vast marshy borders.

CLIMATE

In describing the climate of Rumania, it is best to think of the country as two separate parts—that west of the Carpathians and that east and south of the mountain arc. In the western portion no part falls below the agricultural limit of the twenty-inch rainfall isohyet. The

Mountains and Transylvanian Alps behind, the lower the annual precipitation level becomes, until in western Rumania the lowest land receives on the average of 20 to 30 inches per year. Across the Alpine summit meadows of the Carpathians to the eastern foothill region, the rain diminishes until the Danubian plains average from 20 to 30 inches with

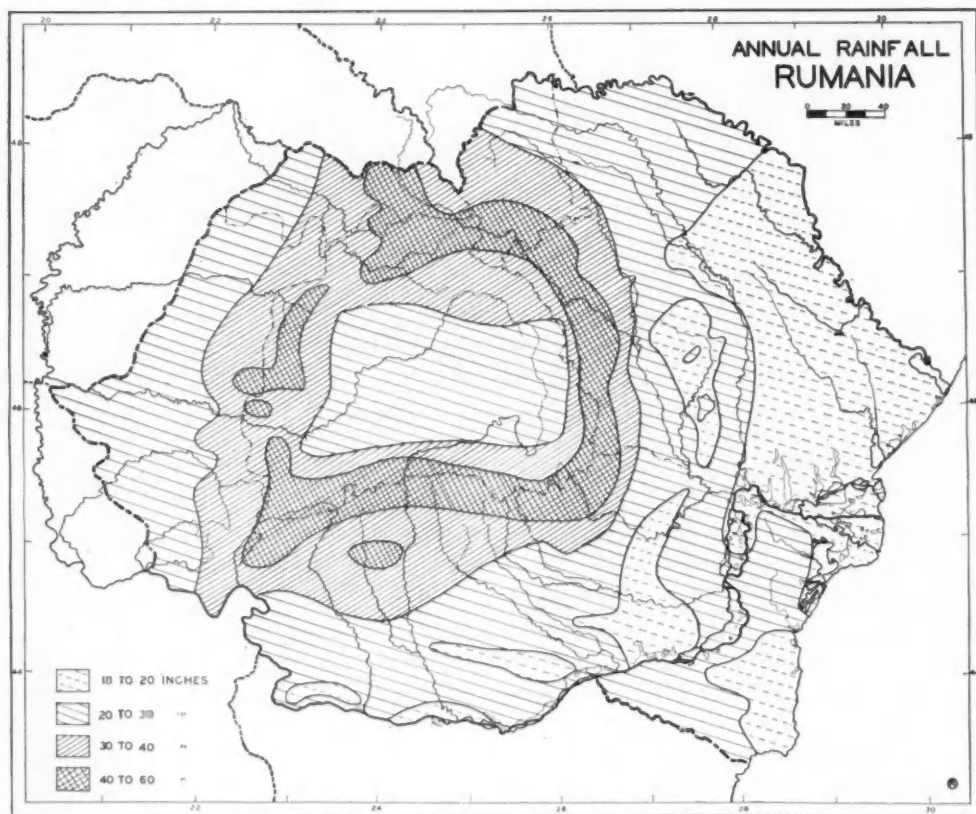


FIGURE 2.—The effectiveness of elevation is reflected in the amount and regional distribution of precipitation.

mountain valleys and western slopes often receive as high as sixty inches of rain per year. Such an amount together with the influence of elevation and slope permit a dense wooded growth on the mountain sides and ridges of Transylvania. The nearer one approaches the lower levels of the Theiss valley and leaves the Bihor

islands of less rainfall scattered about the lower parts. Farther east in Bessarabia and eastern Dobrudja, the amounts fall below twenty inches. Here marginal acres, subject to drought about two out of every five years, predominate. This is the territory which has so often been termed the "Beginning of Greater Siberia."

Due primarily to the rainfall factor the percentage of forest lands decreases with the increase in distance eastward from the central mountain mass.

Especially in the portion of Old Rumania the precipitation has quite an even distribution throughout the year. The most rain usually comes at the time of the summer solstice while late summer ordinarily boasts of fine clear weather. The rainfall of summer comes in rains of the thunder shower type, sometimes accompanied by hail. The mountainous regions and valleys, as far as the weather regimen, can be likened to the Atlantic seaboard of the United States while the lower portions of the Banat, Wallachia, Moldavia, Bessarabia and Dobrudja can be compared with the states of Kansas and Nebraska. The climate of Bucharest compares quite favorably with that of the city of Chicago with the exception of a very slight increase in temperature and a decrease of ten inches of rainfall (23").

Not so evenly distributed is the temperature. The winters are long and cold (a minus 30 degrees F. has been recorded in the higher altitudes). The summers, though short, are exceptionally warm especially on the plains. At times in July the Rumanian plains areas experience truly African heat, a continuation of the *sirocco* wafted in as far as the Banat. The hot wind comes from the southwest and in this portion of Europe is called the *austru*. Because of the mountain barriers to the east of the Banat, the full force of the winds fails to cross to the plains of Transylvania and Wallachia.

On the eastern border, no mountain barrier prevents the full sweep of wind from over the Russian

steppes from continuing to sweep across the plains of Bessarabia. In summer they bring a baking heat of the purely continental steppe type and in winter a temperature cold enough to freeze the Danube over during the night. Either is known as the *crivatz*.

Another wind, the *baltaretz*, from the southeast brings torrid heat to eastern Rumania during the summer. The *baltaretz* has more beneficial effects than the parching heat of either the *austru* or *crivatz*, because it often brings rain, transporting the moisture from the Black Sea and the Danube Delta.

During the winter the nights are extremely cold. The *crivatz* persists into the month of April and may cause the plain to receive snow squalls. But with the end of May summer heat surely comes. Such conditions leave a very short period of spring-like weather before summer begins in full earnest. Winter may be ushered in quickly, as early as October, thus preventing industries dependent upon a long summer season.

The percentage of sunshine runs highest in the Banat and the eastern plains region where during one-half of the year the skies are cloudless. The greatest cloudiness prevails in the higher altitudes and just west of the mountain arc.

Averages show that on the Danubian plains and eastward to the Russian border two years out of five are drier than normal. Such dryness becomes accentuated nearer the Russian border.

Besides the reasons given, the element of difference of latitude combines with altitude, winds, precipitation, nearness to large bodies of water, and other minor factors to

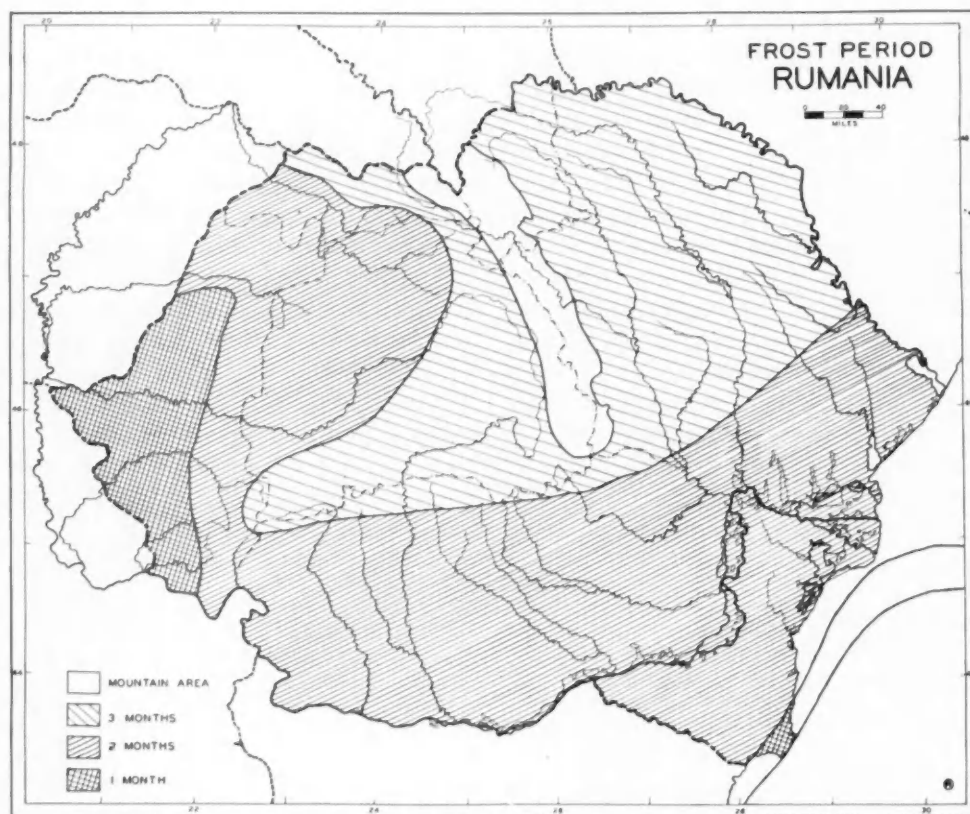


FIGURE 3.—Another factor in the diversification of the agricultural utilization of Rumania's cultivable lands is the length of the growing season, ranging from a very short period in the mountains to one of almost twelve months' duration in the southeastern plain.

make the growing season of different areas exceedingly variable. From the frost data map, it may be seen that a frost free period of at least ten months decreases from the south-eastern tip in Dobrudja to the mountain areas and Bukowina where frost may be expected in any month. In ordinary years lilacs appear along the Danubian stretches in Wallachia at least five weeks before they blossom in northern Bukowina.

VEGETATION

Vegetation, in turn, responds to a combination of all factors. In Bessarabia grassland predominates; along the Danube vast marshlands with their accompanying marsh grasses and

willows offer homes to plentiful bird life. As one approaches the foothills, trees dot the landscape. The zonation of forests comes on the mountain slopes with increasing altitude. Fruit trees and other trees more susceptible to frost grow on the lower slopes and gradually give way to the deciduous forests of oak, beech, and birch, then to pine-spruce coniferous forests, and above the timber line, to Alpine meadows. Beyond the mountain crests the western slopes show a more luxuriant growth of vegetation in response to the more copious rainfall. Approaching the Hungarian plain where the rainfall diminishes and droughts are more frequent, grassland again predominates in the landscape.

SOILS

The soils of Rumania in most areas rank as exceedingly fertile. The western plains of Rumania form the eastern portion of the very fertile Hungarian plain. Transylvania has a soil derived mainly from the decomposition of Tertiary limestones and basaltic materials, quite thoroughly leached in certain areas due to the more abundant rainfall. Despite the leaching the soil remains reasonably fertile. However, the largest important area of great economic value includes the plains of the Danube and its neighbor, the foothills. Here the soil material is partially a result of the decomposition of soft and recent rocks or of river alluvium. Due largely to the climatic environment, and the grass cover, the Danubian plain marks the beginning of the great *black earth* or Chernozem district. This soil, because of the small amount of leaching, is rich in calcium, potash, and humus and forms an excellent cereal soil. Farther south in Dobrudja lies a region of less rainfall, and a longer frost free period where the soil is equally fertile but of a distinct reddish color, known as the chestnut earth. Mountainous areas in Bukowina, Moldavia, and Transylvania have soils typically podsollic and belong to the brown forest soil group.

Considering the four main elements (the Danube, the Carpathians, the plains, and the Black Sea) in the life of the Rumanian people, the plains have in recent years at least stood far in the lead. Since the enlargement of Rumania, the plains may not hold so predominating a place because each of the regions—mountains, plains, foothills, the open steppe, forest, and marsh—can con-

tribute its share to the economic resources of the nation as never before. It has been said that no country of Europe could boast such a variety of resources as Rumania. Recent developments in Rumania have been in three spheres—agricultural, pastoral, and mineral. Today the country stands facing the beginning of a new epoch in her history—a period of great industrial development.

Nature sets the stage, man is the actor. How can the actor make the most of the opportunities of the stage upon which he is placed? Will he produce an epoch making drama to which others can look for inspiration and guidance or will a few actors cripple the rest by the unwise use of those gifts of nature placed in the actors' path?

AGRICULTURE

Prior to the World War agriculture eclipsed all other Rumanian industries in importance. Since the addition of Transylvania and the Banat, both important for their manufacturing industries, Rumania still claims agriculture as the most predominating industry. The country seems destined to be one of the leading agricultural countries of Europe for years to come.

Within her borders, Rumania holds under her guidance nearly 70,000,000 acres of land and a population of nearly 18,000,000. Almost 80 per cent of these 18,000,000 derive their living from the soil. Of the 70,000,000 acres over one-third or 26,000,000 areas are cultivated, 3,000,000 reserved for grass, and 6,000,000 used as pasture land.

To understand the agricultural situation in Rumania to-day, it is necessary to look back a few years.

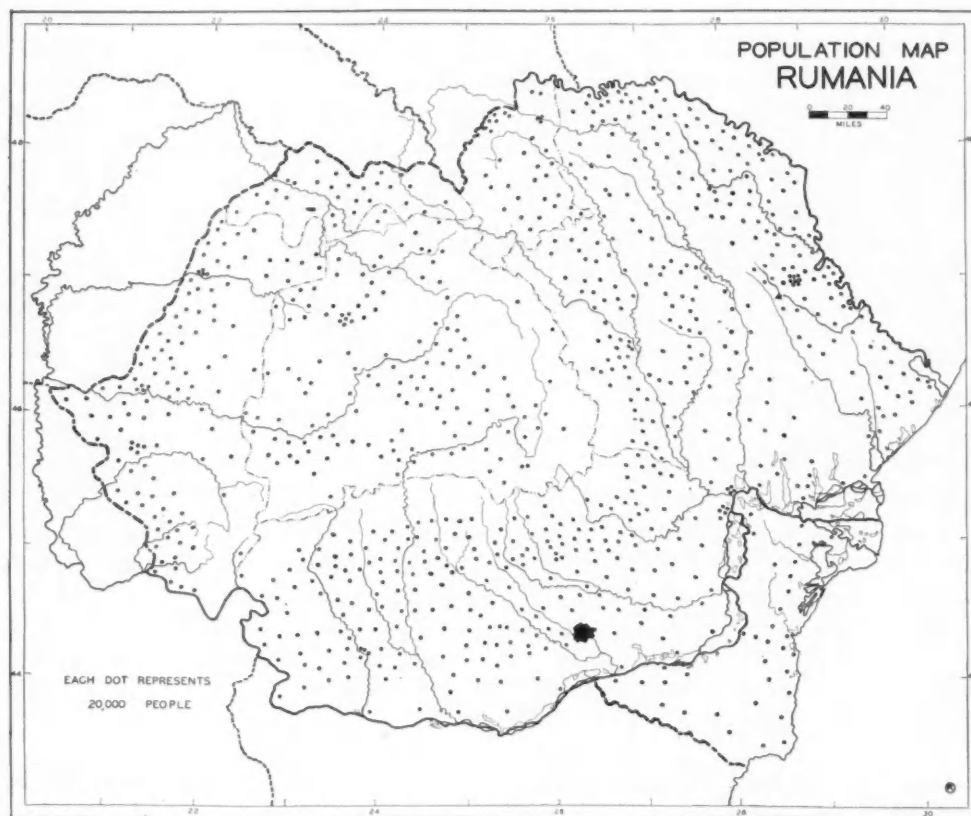


FIGURE 4.—Nearly 80 per cent of Rumania's 18,000,000 people derive their living from the soil. Few large centers of concentration appear because of the large percentage of rural inhabitants. The main mountain ranges and the marsh bordered rivers stand out as zones of sparse habitation.

Up to the year 1864 all land holdings were in the hands of the upper class. During this same year, through the efforts of a small group, agrarian reforms were granted. From time to time the small landholders gained a few additional rights. 1918 stands out as a red letter year in the minds of the common people of Rumania. Breath taking agrarian reforms took place during that year. According to the new agrarian measure, the large estates—occupying 42.4 per cent of the land, had to be divided. The expropriation of the estates and the accompanying allotment to the peasants began the next year. As may be realized, such an act meant a great deal of work, surveys of the

estates, and a census of peasants to receive allotments had to be made before the apportionment could be attempted. The work has progressed with as much speed as possible. Up to November 15, 1929, of the 13,500 estates to be divided, 9,000 had been allotted to new owners. This left about 11.2 per cent of the land in large estates. Rumania intended to finish the expropriation of the remainder within the year 1932, but on account of many hindrances the work has not been completed. Those subdivided estates not given to the peasants are to be kept in charge by the government as State Reserves. The attempt has meant not only a tremendous outlay of money for the

government but has changed the outlook and status of the peasant. For the present at least, the hard working peasant now has an incentive to plan and look forward to his own betterment in the future. It has changed the psychology with which he attacks the problems to be solved. Up to the time of expropriation the peasant had had the lot of the usual serf. Never had he had a chance to save any money for use in the future, so upon the division of the lands, he lacked money with which to buy tools, seed for planting, or scientific remedies for controlling pests or taking the proper care of his crops. To add to his predicament, he lacked even primary education, scientific training, and the habit of looking ahead and planning for future work. So many handicaps meant that the government and other organizations had to aid the peasant farmer to overcome as many of these as possible, if he were to succeed. It has meant that he has been aided in many ways but the machinery for the most part has remained unpurchased. Because of the peasant's inability to buy modern machinery for his small farm (he had had the privilege of using the machinery belonging to the large estate owner under the old régime), he has reverted to the most primitive methods of farming. Where the farmer needs four beasts of burden to plow and cultivate his fields, a great many times he has had to do his work with only one. Where he should have a spring tooth harrow for cultivation, he has had to make the best of the primitive thorn harrow. With such primitive tools, plowing and cultivating can only be shallow at best, and harvests necessarily correspond. As before the war, only on the estate farms is there any-

thing resembling the methods used on the Central Plains of the United States.

The size of the farm varies in different parts of the country according to the topography of the landscape and density of the population. The size of the estate of the large landowner was fixed by the government at 494 acres in regions of dense population, at 741 acres in regions of medium density, at 1,236 acres in areas of sparse population, in Bessarabia at 247 acres, and in Transylvania and Bukowina at 1,236 acres. In addition the estate owner could retain certain orchards or vineyards designated by the government. In 42 per cent of the cases, the peasant allotments average less than five acres while 39 per cent have no more than 12 acres, and 14 per cent under 25 acres. Up to December 31, 1924, the area of land in Greater Rumania that had passed or was about to pass into the control of the peasants aggregated nearly 14,975,000 acres, of which more than 11,690,000 were arable land, meadowlands, and pastures. Will the peasant learn to plan and plant wisely, to properly cultivate and harvest his crops? Will he be able to raise his standards of living and be better off than under the old régime? Or in a few years will his condition be more serious than to-day? In several areas where the peasant has owned land the longest, conditions have not improved as the leaders of the movement had hoped for; but this may not prove true for all of Rumania.

What effect has the expropriation had on areas planted to crops and the total amount of production? The areas planted to crops have gradually increased from plantings of

28,926,000 acres before the war to 29,350,000 acres. However, production per acre has decreased primarily because of the retrogression in methods, from fairly modern to the archaic traditional forms of each ethnic group. Increased acreage has overbalanced decreased production per acre so that the total production has increased slightly. Then why has the country fallen down so terribly in the amount of agricultural products exported? Several reasons lead to the answer. Her population has increased, per capita consumption has increased, and the farming population has decreased because a trend of "farm to city" movement has left fewer tillers of the soil to supply food for an increased city population. Besides the reasons mentioned, another factor has had a tremendous influence on agriculture in general in all parts of Rumania—a shifting of the seeding of fall sown crops has taken place—such as wheat and rye—to the sowing of spring sown crops (corn, barley, and oats) for which there is less export demand. As far as soil and natural conditions are concerned, agricultural possibilities have more than doubled those of Rumania available for cultivation previous to the World War. In Rumania before 1914, 88 per cent of the plowed land was given over to food and fodder crops; in 1925 the percentage had increased to 94.1 per cent. Field crops occupied 29,350,000 acres in 1925 and over 31,000,000 acres in 1929. Cereals, as a group, totaled 266,000 acres less than before the war, due mainly to the encroachment of other crops upon cereal lands. Thus a shifting from export crops to ones of subsistence type has passed as a wave over Rumania within the last few years.

WHEAT

Up to the time of the war wheat held the leading place among the export crops. The greater portion of the wheat land, as shown on the vegetation map, lies on the lower elevations especially in Wallachia, Dobrudja, Bessarabia, and in the western part of Rumania on the plains of the Theiss. Each of the regions has a typically continental type of climate, with an average of 23.5 inches of rain. That, coupled with the fact that practically all the territory has a rich, deep, loessial soil similar to the drift soil of Illinois and Iowa prairies, particularly fits it for raising winter wheat. On most of the peasant farms plowing is poorly done on account of the primitive methods employed; the wheat is sown broadcast and when ready for harvesting is cut with a sickle. In some places as in northern Bessarabia where coöperative farming has advanced, modern machinery is at work in the fields. On some of the small peasant farms, machinery is used, but it is more the exception than the rule.

Most of the grain has to be threshed by primitive methods. The most usual method duplicates the old traditional method of having the grain trod out by cattle. After the kernels are shelled, the grain is winnowed by tossing it in the air against the wind. Under the old régime the large estate owner, managing thousands of acres, could afford more modern machinery, and he took more care in the selection of seeds and treatment of diseases affecting the crops, hence the product was usually more uniform and more apt to be superior to the product now raised on the small plots. The peas-

ant, as a rule, has no place to store his grain, hence it must be sold and shipped as soon as harvested for whatever price the buyer sees fit to offer. Due to poor care and the methods of threshing, his grain has to be washed before it can be milled. As a result of the poor quality and condition in which it reaches the market, the peasant receives a price below the average. Lower prices only increase his natural desire to make his plot one of subsistence agriculture and not one of export crops.

The type of wheat that the farmer sows in the fall may belong to one of several varieties, all of which have been developed in Rumania to meet the need of the various soil types and the climatic conditions of the different parts of the country. The wheat of the uplands and higher elevations of western Rumania belongs to a soft variety while that of Moldavia and Dobrudja belongs to the hard varieties exceptionally good for flour.

Of all the departments, Bukowina is the least self supporting in wheat. Transylvania requires some imported but not such a large percentage of the amount consumed as in Bukowina. Wallachia stands in the lead in the amount of wheat for export. Occasionally the farmers sow small amounts of improved varieties from Russia, Hungary, or Germany. The winter wheat belongs to the *Triticum vulgare* variety. The peasant prefers to sow spring wheats and as a result less winter wheat is sown than formerly. The spring wheats are durum wheats. Although the total increased acreage is small, it does show a trend since expropriation—in 1930 the farmers planted 1,353,000 acres to winter wheat and none to

spring wheat; five years later the farmers sowed 563,000 acres to spring wheat while winter wheat held an acreage of 1,367,000 acres. As wheat is produced mainly for city trade and export the peasants have not been so eager to sow wheat as to sow other grains which would make their plots of ground as nearly self-sufficient as possible. Such ideas have brought about an increase of other grains so as to satisfy the home demand and this has meant a gradual reduction in the wheat yield.

Very little fertilizer, if any, is ever put upon the land except in the Banat. Instead the farmers practice rotation of crops. The practice of using no fertilizers is not so startling when one realizes that the Lower Danubian plains have not been used to any extent until the last fifty years, approximately, for food production. Before 1870 they served primarily as pasture lands. Up to that time, due to such unstable political conditions, the plains offered no barrier to movements of people and lay exposed to frequent attack so that very few people made any attempt at permanent settlement. At the present, rotation of crops seems to be sufficient to maintain ordinary fertility of the soil. The peasant and the estate owner have both become so accustomed to the rotation method that even though the ownership of the land changed, the plan of rotation suffered very little disturbance. The peasant has increased his total acreage of seedings because after he had planted the usual amount, a small amount of land remained unplanted. Barley and oats have been the favored crops for the additional plantings. The crop rotated with wheat in the better watered areas is corn.

CORN

In Rumania corn has many times more acreage than all the other cereals combined. The peasant farmer prefers corn for his main food in place of wheat which he sells to the city dweller. Of course it was natural when the plots of ground were allotted that each peasant should first see that he had planted enough of the cereal that he and his family needed for their food supply. The grain is ground into cornmeal and then made into a thick cornmeal mush, called *mamaliga*, the national dish. The tendency to make his own land a plot of subsistence means that the acreage of Greater Rumania has greatly increased. In the up-

lands or that portion of the plains that lies back from the rivers and next to the foothills in each region where wheat begins to decrease in the predominance of the crop land, corn alternates with other cereals and assumes first place in the acreage of tilled ground. Not only has it assumed an increased acreage (nearly 12,000,000 acres in 1929) but it has doubled in production between 1928 and 1929 in all Rumania. Not only does the peasant prefer to plant it now for his own well being but also in former years the estate owner encouraged him to plant more corn because in taking care of it he broke up the ground much better with his hoe than with the ordinary plow (4-6 inches) and thus destroyed more

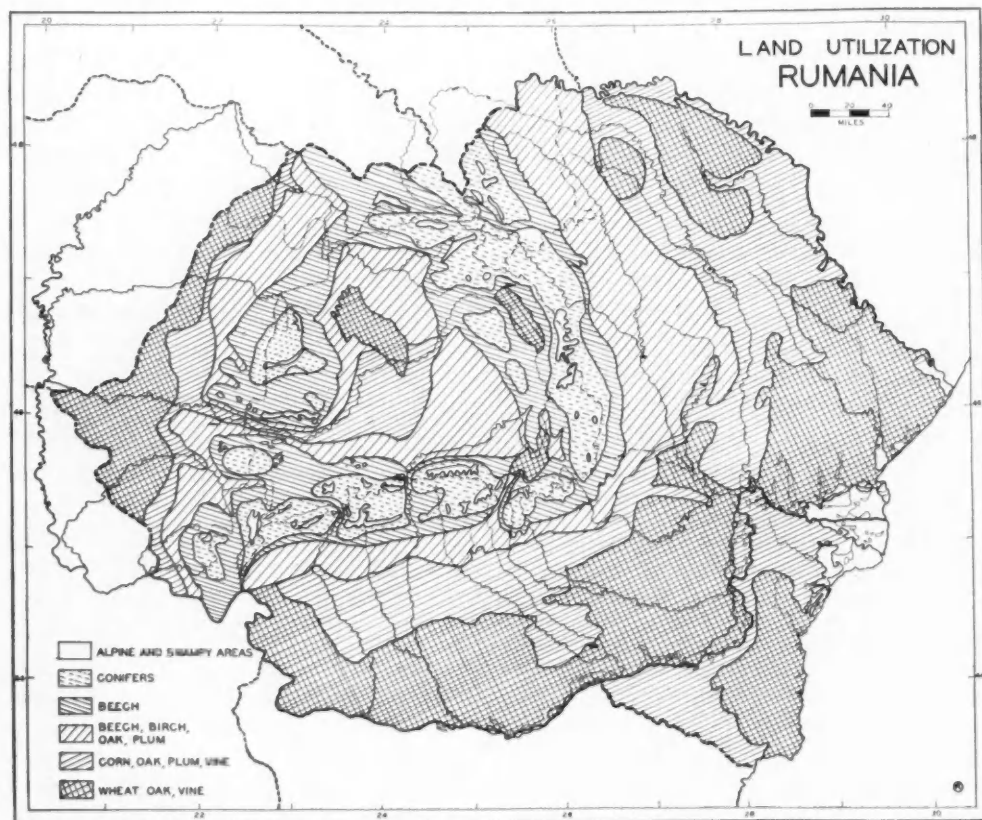


FIGURE 5.—The land use of Rumania very clearly portrays the effect of the physical environment (relief, climate, and soil particularly) almost to the exclusion of other environmental elements.

weeds and pulverized the soil better for the coming wheat crop.

Corn assumes greater proportions in the foothill region where the rainfall average is higher with a decided summer maximum. The showery type of rainfall received is most beneficial to corn because it gives a high sunshine average. This combined with the high temperatures, both day and night, of a typical continental summer adds much to the ability of the plains to grow an abundance of corn. The rich, deep, loessial soil of the higher plains averages as good or better yields than the lower, more level land nearer the river. The time for planting the corn comes in the spring in March or April, depending upon the location of the area, and needs to be harvested soon enough to allow the sowing of wheat on the same ground in the late fall. Only in Transylvania does the corn sometimes have to be harvested immaturely in order to sow the wheat although in other sections wheat is sown broadcast between the rows of corn just before harvest time. As the farmers raise the corn more for home consumption than for export, it does not depend upon good means of transportation as does the wheat crop, hence it can be grown farther from the Danube or other means of commercial transportation. Accordingly, other things being equal, corn lands occupy the areas farther from the rivers.

In Old Rumania, the early maturing varieties have won favor on account of sowing wheat in the fall on the same land. The most commonly cultivated variety is a yellow flint, a native peasant corn maturing in about 150 days. In the districts where the season is somewhat shorter, especially in Moldavia,

a variety maturing two weeks earlier than the yellow flint, though not with such high yields, became the type commonly grown. A variety of Hungarian corn predominates in western Rumania. Szekely, an especially early ripening variety grows best in the more mountainous regions. The corn intended for export belongs to an Italian variety with very small, flinty kernels, and grows and matures within 150 days. The Italian variety ripens early and ships well.

American varieties of corn do not grow well in Rumania, because they have not been developed to meet the temperature and weather conditions of the country. Much smaller yields than of the native varieties result from the plantings of the American varieties. Such results discourage additional sowings.

The farmers can plant corn on the same ground two years in succession though they generally alternate it with wheat or some other cereal. In Moldavia and Bessarabia especially, they sow the corn broadcast upon unplowed fields and then plow it under. When the corn, thus sown, has grown to be about three inches high, the weeds, abundant and sturdy, are hoed out and the corn thinned out and hilled up by the peasant using a semicircular hoe. This method of cultivation takes place two or three times a season. When the harvest season comes, the peasants cut the stalk, with a hoe, very close to the ground. They throw the stalks together in a pile to dry. Very often the peasants take the stalks from the field too soon causing them to heat badly, and making the crop inferior to well-cured corn. Most of the peasants store the corn in some sort of a crib, resembling a

large basket, made of woven twigs and covered with the usual roof of thatch. The corn for export is sent, as soon as thoroughly cured, on its way toward its destination. Belgium and northern European countries that cannot raise corn, usually buy practically all that Rumania exports. The tendency in corn production has led to an increase in acreage. This means, even with increased peasant home consumption, that the exports will not take care of the surplus. The surplus at home will probably mean increased numbers of livestock to which to feed the corn. Such practice is carried on mainly in Transylvania. In this manner, perhaps, Rumania can make up somewhat for her great decrease of export wheat.

OTHER CEREALS

In the same areas other cereals planted reach large acreage. All other cereal productions fall below that of corn and wheat, however. Next in line to the two leading cereals in acreage in 1929 comes barley, oats, rye, millet, sorghum and buckwheat. All six grains are sown, tended, and harvested in very much the same manner as wheat. In recent years barley and oats have had a tendency to increase in acreage due to the fact that the peasants prefer a haphazard spring planting rather than a planned fall planting. If the government can teach scientific methods to these usually illiterate peasants, it may in time correct some of the present troubles and make for a more even and better planned production of crops.

Barley has its greatest use as food for livestock and for export. Will the new increase of production be taken care of by the export trade?

Probably not. Exports may take care of part of it. Western Europe demands so much grain for its animal industries that it cannot supply itself. Exports cannot hope to take care of all of it—increased home consumption must. Increased home consumption means increased numbers of cattle and livestock.

Oats, next in acreage, have not increased in acreage nearly so much as has barley. Even between 1924–27 the production total fell considerably below the usual figure, but again in 1929 the production increased. Northern Moldavia, Bessarabia, southern Dobrudja, and Transylvania rank as the principal raisers of oats. Providing the demand from Belgium, Holland, Italy, England, Austria, and France remains steady for Rumanian oats, it will mean that the raising of horses will not increase in Rumania within the next few years.

In no district of Rumania has rye ever come to be a cereal of great importance except in Bukowina where its acreage usually exceeds that of wheat and in Bessarabia where it exceeds the oat acreage. Even in these two states, it has decreased in importance within the last few years. Consumption per capita has decreased greatly since the war but not so much as has production. Rye is out of favor because it, too, is a fall sown crop.

Rumania produces only enough millet to satisfy the demand of the Mohammedan population. Greater Rumania plants relatively unimportant acreages of millet, sorghum, and buckwheat.

OTHER CROPS

Besides cereals, Rumania raises a few other farm products which stand

out importantly. Potatoes, though very unimportant in relation to the wheat and corn acreage, form a main article of the Rumanian diet. The Rumanian uses potatoes almost exclusively as a human food, but a few provinces (Banat) use as high as 30 per cent of their crop for food for livestock and for use in the manufacture of alcohol. In antebellum years Rumania very seldom raised enough tubers to satisfy her home demand but since the agrarian reform a slight increase in acreage has taken place. It seems the increase is just enough

Ten factories hold the key to the sugar industry today in Greater Rumania. Due to the change of boundaries it is hard to estimate antebellum acreage and sugar production, as some of the Bukowina factories drew sugar beets from Galacia, now a part of Poland, and some of the sugar beets of western Rumania to-day are shipped to Hungary for sugar manufacture. As near as estimates can be made consumption before the war averaged about 28,489 short tons more than production. In 1923-24 the acreage devoted to sugar



FIGURE 6.—Most Rumanian farms lack modern machinery. Ploughing such as this in the Danubian plain is usually shallow. Harrowing is accomplished by means of thorn harrows and many times the seeds are sown broadcast. Such methods give rise to poor returns. (Courtesy of I. Rosenthal, Rumanian Legation.)

to take care of the home demand including domestic food requirements, feed for livestock, and industrial uses. Little, if any, increase will ever be noted in potato production because Rumania can never hope to compete with the more northern European states, such as Poland, Germany, and Czechoslovakia where the lighter soils and much heavier rainfall fit the countries for much heavier yields per acre.

beets increased by 19,000 acres over pre-war years. The difference between consumption and production amounted to 8,000 short tons in favor of production. The next year (1924-25) acreage increased as did production but the resulting amount of sugar fell below the demand. The year of 1925-26 saw a doubling of the acreage (73,000A. to 158,885A.) from the antebellum figures. This year brought a surplus of about 5,000

short tons. In 1926-27 increased acreage added 44,715 acres to the previous year with a total production of 1,324,000 short tons of beets producing 143,300 short tons of raw sugar. Production then gave Rumania a large enough surplus to permit an export. Estimates for the year 1927-28 gave another added area of 5,400 acres. If this can be taken as a guide, it means that the span of rapid extension of the industry is at an end and that though some years production may rise above the previous figure, it may not quite equal it at others. Decrease in acreage may even take place unless the consumption rate increases considerably above the pre-1914 rate of 12.7 pounds per capita.

In certain localities tobacco takes a more or less prominent place as a field crop. Tobacco production has strict government supervision. Before a person can plant tobacco, he must obtain a permit to grow it. In return for the permit, he must promise to plant no less than 10 hectares (24.7 acres) for a certain number of years and to grow it under the regulation and supervision of the government. The number of acres demanded limits it to production on the largest peasant holdings or large estates only. Soil and climatic conditions further restrict its culture. Climate restricts it the more severely because it limits it to hilly regions with a southern exposure where it is protected from the northern winds by the forest covered hillsides. As with most of the other crops, Rumania has developed through 2,000 years several local varieties. On the sheltered hillsides of Wallachia, Besarabia, and western Transylvania a small-leaf product of very good quality grows luxuriantly, besides the

local varieties derived from Turkish brands. The best quality leaf comes from plants produced from seed from Macedonia and distributed by the State monopolies. Since the war, acreage has increased but yields per acre have decreased. Yet most years Rumania has an excess of production over demand. She exports some to neighboring states on the west and northwest. She imports some tobacco, though none from the United States because the Rumanian demand calls for very mild flavored tobacco. Her production should stay about the same as at present for some time to come according to all recent trends in acreage, production, and consumption.

FRUIT

In the same areas that corn predominates on the farmlands of the more wealthy peasants and on the large estates, grow vineyards, plum orchards, and scattered small plots of a variety of fruits such as pears, peaches, apricots, and apples along the hillsides and in the protected spots of valleys. The hillside positions insure safety from water standing around the roots, and provide ample air drainage in the thermal zone to offer sufficient protection from too early frosts in the fall. These two reasons coupled with the warmth and abundant sunshine of the Rumanian summers assure a well ripened crop. Here on the hillsides the higher ground receives ample rainfall freeing the area from the ravages of frequent droughts such as the plains and the steppe lands of lower elevations experience.

It is said that the luscious wines rival the famed Hungarian Tokay. Greater Rumania ranks fourth among the wine-producing countries of Eu-

rope in the amount produced. Three-eighths of all the area devoted to vines in Rumania is planted to the American vine. The American vine does not meet with such great favor, however, because it is not well adapted to the climatic sequence of seasons in Rumania. The grape grows best and most abundantly on the lower hills and disappears almost altogether above the 1,000 foot contour except in especially favored locations. Though the grape has more than twice the acreage, the plum is the characteristic fruit of the country. The fruit of the prune plum tree furnishes the native strong drink (Tzuika), plum brandy. The plum grows at much higher elevations than the vine. It becomes a familiar part of the landscape in the upper limits of the vine regions and does not disappear until the beech becomes the predominating tree of the upper slopes of the mountain areas. Very few farms or plots within the boundaries of this area are without a number of plum trees. The tree has become well adjusted to the climate and bears well. In this field lies an opportunity to develop an export product through the establishment of canneries and drying houses to prepare the fruit for shipment.

LIVESTOCK

As well as increased acreage of the subsistence crops on each peasant holding, there is a tendency at the present time to increase the number of livestock. Under the old land régime the landlord owned most of the livestock. Since the expropriation each peasant, besides his holding of land, has the right to graze a certain number of animals upon the community pasture and meadows. The number of animals depends upon

the total area of all his holdings. In order to make the most of the opportunity, each peasant tries to keep as many as he feels he can possibly afford. The animals may include a horse or ox, a cow, a calf or two, several pigs, a few sheep, and some chickens. The peasant owns on the average more animals per acre than the estate owner. In this way the tendency to overstock the pastures has developed. If overstocking continues, a decided increase of forage crops to supplement the lack of pasture forage and a decrease of exportable cereals will necessarily take place.

Transylvania and the mountain areas of Old Rumania offer exceptionally fine facilities for the livestock industry. Here the typical persons are the shepherds, though their majority has decreased since the beginning of the nineteenth century. Even with the natural adaptability of the luscious green mountain grasses for forage, a less noticeable increase has come in these areas than in the lower areas of Old Rumania and Bessarabia since the land reform. The grazing areas of Transylvania and the mountain districts of the country had a well established and prosperous commercial livestock industry before 1914. Since the war, however, markets in central Europe have recovered but slowly, and impeded further by export taxes, the Rumanians have faced serious handicaps to keep or increase their foreign markets and consequently have only very slowly recovered from the blow dealt by the war.

Over the greater part of Rumania the peasant is not a natural animal breeder. The types of animals that he raises belong to inferior stock. In

the mountain area the animals are the type adapted to rough hilly land and not too favorable weather—small, wiry cattle, better fitted for work animals than for beef, and few are used for milk. Sheep of the mountain variety furnish the main milk supply of many areas, as well as wool and skins. The peasants raise considerable numbers of hogs, usually razor-backs. Each peasant raises several as pork furnishes the main supply of meat. For the greater part, it can be said that the animal industry is a home industry. The main object of peasant agriculture is the keeping together of a home and the maintenance of the family group. The farmer prizes most of all the sheep that he raises, next the ox or horse, and last of all the pig.

The Rumanians have always valued their sheep more than other animals because they serve a three-fold purpose. The sheep furnish a milk supply from which the peasant makes the cheese for home use and oftentimes for export. The same animals furnish wool for clothing for all the family and when killed they provide skins for the typical high astrakan cap and the lamb pelt coat of the farmer. The cheese together with the corn meal mush, fruits, and vegetables put down in brine form the main articles of the peasants' diet. The meat of the lamb provides the meat eaten at feasts or other holiday celebrations. There is no method of refrigeration so unless the meat can be eaten within a very short time after killing, it does not prove profitable for the family to eat much meat. Some of the lamb and mutton does go to the city markets and thus adds to the altogether too meager income of the peasant household.

In the mountain districts where the main thoughts of the people center about the raising of sheep, transhumance becomes a common practice. A herder takes the flock into the high alpine pastures or to the flat-topped mountain areas during the summer and brings them to the lower slopes and valleys for the winter. Transhumance necessitates a great many times the ownership of two homes, the one a mountain shack for shelter during the stay on the alpine pastures and the other a valley home near fields of fodder crops or in a farm village where the rest of the family stay all the year around. The mountain pastures belong to the communal group as in Switzerland. Since the breaking up of the large estates, many large flocks of sheep exist no longer. Without a large flock to tend it does not pay for the farmer to keep one of the family with the flock at all times, so the practice of transhumance is fast becoming a thing of the past.

In most parts of Rumania the native breeds of livestock extend down onto the plains where in places they have been crossed with diverse other breeds. The greater share of the horses raised in Rumania stay on the farms for work animals and are rather low grade. A few large estates have taken great pride in raising animals of fine breeds. These have furnished the Rumanian army with remounts for many years. The Moldavian horses have become quite famous as army horses. As the estates are divided, the number of fine horses raised becomes fewer.

The cattle of lowland Rumania, too, are of inferior stock. Usually they are large boned, long legged, active and powerful in the forequarters but tapering in the hind-

quarters thus making excellent beasts of burden. Though they make fine yoke oxen, they develop slowly, mature late, are difficult to fatten, yield practically no first-class meat, and are no milk producers. For export they have little or no value.

The only dairy industry to be found in Rumania centers around the cities where the farms try to supply fluid milk and part of the butter and cheese needed in the centers of population. Since the rapid migration of the people to the city, the milk problem has become acute in many of the larger centers. As compared to some of the more northern dairy countries, Rumania has no dairy industry. The farmers as a rule pay very little attention to the cow and give it such poor care that the dairy industry can never be a success until the peasant learns to take better care of his stock. Many times the cattle are never housed even in the severest weather of winter. The only shield from the cold winter blasts are very poor substitutes such as fodder stacks or some other roofless shelter. Under such conditions dairying can never advance.

In the mountain areas the razor-back hog and in the lower areas the swamp hogs predominate. Both of these are unimproved native breeds and, though kept on almost every farm, are very uneconomical in comparison to the hog of the United States Corn Belt. Pork provides the staple meat of the peasant because the peasants can kill the hogs during cold weather and prepare the meat for keeping through the summer months by salting or smoking.

The livestock industry though it has regained its place in export to some extent since 1920, probably can

never take its rightful place in the commercial life because of the poor methods of feeding, poor breeds of animals raised, and the inferior quality of the meat which can only command low prices. Improvement can come only through education of the peasant in whose hands the main part of the industry rests. Education cannot or will not be accomplished within any short period of time.

In all probability the increase in population and change in standards of living, together with poor methods of peasant agriculture, unsatisfactory tax laws and other conditions, will diminish the possible surplus from the areas that comprise Greater Rumania so that she will not for years to come hold the same influential place in the markets of western Europe that she held before 1914.

LUMBERING

Forests clothe nearly all the mountain area of Transylvania and the adjoining regions. Here flourish in great splendor the trees of the temperate climates, the timber of which the world to-day has such need. Among the forests of Rumania, a high percentage of the trees have reached merchantable size. Estimates say that Rumania has 7,228,319 hectares (17,853,947 acres) of timbered lands. One fifth of the land of Old Rumania came under the term forested, but with the addition of her new territory that figure rises to one-fourth. On the upper lands of the plains and the lower foothills, oak, ash, elm, maple, walnut, hornbeam, lime, and poplar predominate among the forest trees. In some areas on the mountain slopes the beech holds the dominant place and

in its lower extent grows associated with birch, ash, maple and hemlock. The forests of the beech sequence may extend as low as 1,000 feet or as high as 3,000 feet. Vast areas of the higher mountains have almost pure stands of fir down to the 2,000-foot level. The main tree of the fir forest is the spruce (*Picea excelsa*) which yields a high grade wood for musical instruments. Trees such as the grained ash and curled maple furnish excellent timber for furniture. Soft woods supply a source for paper,

to attack by enemies and with no timber for building homes. Under these conditions settlements were kept back in the foothill and mountainous regions where the rough topography and forests offered protection and the forests provided the material for the homes and plenty of fuel.

During the war a great many acres of forest land were ruthlessly cut over and even to-day show the mark of that thoughtlessness. The two provinces, Bukowina and Transylvania, claim to have the greatest percentage



FIGURE 7.—Soft woods furnish much of the lumber cut in Rumania at the present, and whenever feasible the logs are floated downstream to the mills and markets. (Courtesy of I. Rosenthal, Rumanian Legation.)

cellulose, and wood pulp. The timber supply promises to be one of Rumania's greatest resources providing she develops a far-sighted plan for its future use. The forests to-day, as in centuries past, remain a great asset to the people of the land as they furnish fuel wood, timber for building purposes, and, in certain areas, pasture land for the livestock. Settlement was delayed on the Danubian plains a good many years due in part to the lack of forests, leaving the plains open

of forested area, 43 and 38 per cent respectively, of any of the Rumanian states. Bukowina means beechland, suggestive of the type of forest tree most common; yet intermingled are its usual associates the birch, maple, and hemlock. Bessarabia, a true steppe country, has the least area in forests of any Rumanian state and must depend upon the others for her supply.

Forty-two per cent of Rumania's forests belong to the State. Though

certain areas of forests remain untouched by the woodsman's axe, they lie in the more inaccessible regions. Soft woods furnish much of the lumber cut in Rumania at the present, and whenever feasible the logs are floated downstream to the

her agricultural wealth of the present or future. Yet to have the forests prove the greatest benefit, Rumania must work out a definite and wise policy of conservation.

MINERALS

Many countries envy Rumania because of her vast mineral resources. As shown on the mineral map, Rumania possesses a varied list of minerals, most of which remain unused. Whole areas of her mountain fastnesses are almost unknown as far as mineral content of the rock goes, yet they are believed by many to contain as rich deposits as those which have been surveyed. Oil, salt, coal, iron, gold, copper, lead, manganese, silver, zinc, antimony, aluminum, chrome, mercury, bismuth, molybdenum, arsenic, and natural gas make a partial list of the minerals mined.

Oil production heads the list of Rumanian minerals, and next to agriculture, holds the key to Rumania's most important source of natural wealth and principal export. In 1929 Rumania ranked seventh among the nations of the world in petroleum production with 2.4 per cent of the world's total output. The known oil lands of the country are concentrated on the southern and eastern slopes of the Carpathians within four main districts—Prahova, Dambovita, Buzau, and Bacau. Near Campina the oil towers dot the fields as thickly as in any of the most productive fields in America. The chief wells tap oil accumulations within the Tertiary deposits of Wallachia and in the lower strata of sandstone in Moldavia. The first wells yielded oil about 1850. By 1875, 275 tons had been secured. Today the production of the wells totals 31,673,000 barrels or over,



FIGURE 8.—The Carpathian Mountains of Rumania have an unlimited wealth of timber. The two provinces, Bukowina and Transylvania, have the greatest percentage of their area in forests. (Courtesy of I. Rosenthal, Rumanian Legation.)

mills where much of the lumber can be manufactured. In Transylvania, the Banat, and Maramuresh alone, 33 woodworking factories under normal conditions employ 7,029 men. Besides the 33 factories, 200 or more sawmills, woodworking, and paper mills employ many more men. In 1912 Rumania exported 300,000 tons of wood to the neighboring countries. The export has decreased somewhat at present but remains fairly even. The greater share of the exports go to nearby countries which are lacking in timber products. Forests, though they remain one of Rumania's greatest resources, do not compare with

50,000 acres of land on the eastern Carpathians are known to lie above oil deposits with a probability that 750,000 acres more may yield oil. On January 1, 1929, 8,343 acres were under actual exploitation; on the same date the number of producing wells totaled 1,532 and were controlled by 100 companies. Rumanian factories refined 93 per cent of

manufacturing industries and many other uses to which oil can be put within the home country. Though within the last few years oil production has increased by leaps and bounds (13 per cent in 1929 over that of 1928), the total export of the country has not kept apace. Though Rumanian coal costs less, it is of poor quality so that results from the use of

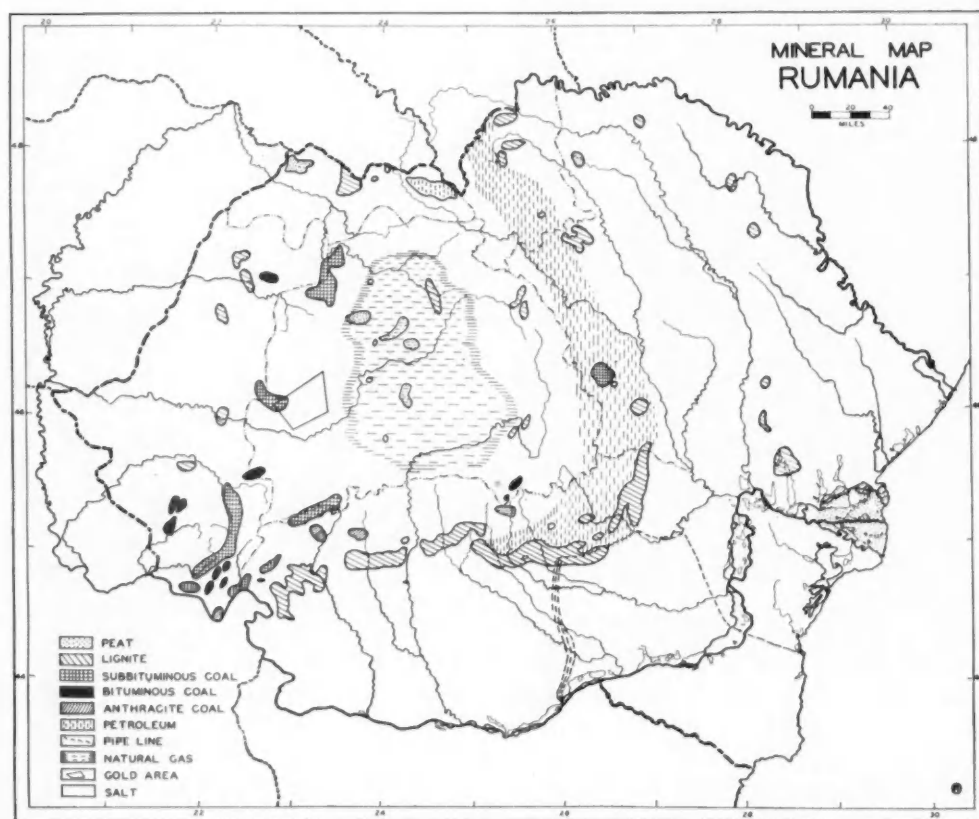


FIGURE 9.—Vast and varied mineral deposits complete the list of natural resources available for exploitation to the advantage of the economic development of the Rumanian state.

all the oil pumped, thus allowing extraction and refining of petroleum to take first place among Rumanian industries. Of all the oil pumped, 60 per cent goes to the foreign countries of Austria, Czechoslovakia, Hungary, Jugoslavia, Italy, and Egypt; the home railroads use 7 per cent and the remaining 33 per cent goes for fuel in

the oil are more satisfactory, hence home consumption of oil has increased with the increase of production.

Foreign capital has played a tremendously important part in aiding the increase in production of oil within the last few years. Estimates state that only one company out of every five is entirely Rumanian

owned. Of the Rumanian owned wells, the State owns and supervises 49 per cent.

Pipe lines take care of the transportation of almost all of the petroleum from the time the oil leaves the wells to the time the ships receive it at the ports. Pipe lines lead from the oil producing and refining centers to a central district on the Danubian plain and from there by pipe line across the Danube and Dobrudja to the fast developing harbor of Constanta. Rumania is one of the two countries of Europe that can boast of valuable oil stores the products of which many nations desire. With wise use of her oil lands, Rumania has an exceedingly bright future.

In many areas of Rumania where petroleum is present, salt is found nearby. Surveys have located salt deposits along the foothills of the Carpathian mountains both on the eastern side and the Transylvanian side. The government has had a monopoly of all the salt mines of the country since 1881 and the revenue derived from the mines adds approximately 128 million dollars a year to the treasury. Though salt is of great importance to Rumania, very little reaches the arteries of export trade so that it does not fill such an important place in the minds of the Rumanian people as does the petroleum.

Natural gas production in Transylvania favors cheaper power for the adjacent industrial plants. The basin of the upper Muresh contains some of the most important wells. Here borings of 250 meters strike rich deposits at a pressure which allows the use of pipe lines. The calorific value of the gas that can be produced each year more than equals that of the coal produced in

all of Rumania in the same length of time. The cost of securing the gas averages approximately 1/10 that of securing the coal and, by pipe line, transportation of the gas is far cheaper. Coal burning engines can

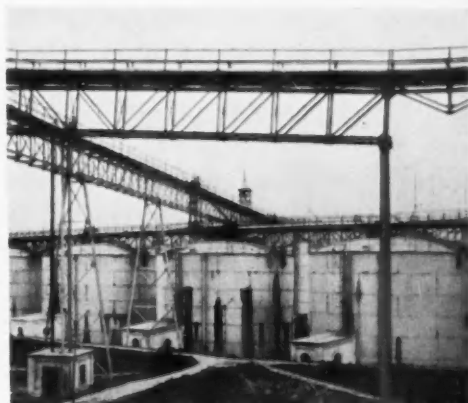


FIGURE 10.—Pipe lines lead from the oil producing centers to a central district on the Danubian plain and from there by pipe line across the Danube and Dobrudja to the harbor of Constanta, where these petroleum reservoirs are located. (Courtesy of I. Rosenthal, Rumanian Legation.)

easily be adapted to burn natural gas. Thus with the use of gas, it seems quite probable that manufacturing centers near the gas mines may shift or develop more rapidly than in the past when they had to rely upon the poor quality Rumanian coal. The regions under exploitation, extending over several hundred square miles in Transylvania, yielded in 1925-26 over 7,500,000 cubic meters daily. The largest part of the gas supplied factories making cement, pottery, glass, and chemicals. It is used as well in lamps for the illumination of village streets.

The three minerals—oil, salt, and natural gas—rank as the three outstanding minerals produced in Rumania. To that list might be added many others, the two next in importance being coal and iron. The

production of coal and iron center in the Banat and Transylvania. Iron deposits are much more numerous and of higher grade than are those of coal. However, the coal is sufficient to save much importation for the development of the iron. The day may come when the Rumanians may feasibly substitute oil, natural gas, or hydroelectric power for that of coal. If so, the country would be able to look forward to a greater increase in metallurgical industries than has been evidenced from 1921-27 when an increase in value from 2,288 to 10,612 lei was recorded.

FISHING

One who has viewed the inundable region of the Danube, will never forget that picturesque scene of lagoons, marshes, lakes, and canals adjacent to the wide river itself. It is a system of marshes and streams bordered by willows, alders, poplars, and water loving plants. The lakes, lying close to the main river, act as spillways for the Danubian waters and homes for millions of fish. The marshes and lowlands adjoining the river in times of high water serve as the spawning ground for the fish but when the water recedes they become the grazing ground for flocks and herds. In the waters of the Danube live approximately 40 local species of fish, the most important of which are the sturgeon, carp, silure, sterlet, and pike. When the flood waters come, the fish begin their long migration upstream from the delta lands near the Black Sea and into the lagoons, lakes, or wandering channels leading from the main stream onto the shallowly flooded lowlands. Here the shallow water affords protection for the spawn while the algae and vegetable water

organisms provide abundant food for the young fish. As the floods begin to recede the fish migrate with their young into the deeper water of the lake and lagoons where the young fish stay until autumn. The older fish search immediately for deeper water. Many of the small fish, together with the fish which make their permanent home in quiet and shallow water are caught in the small lakes. The main catches are made downstream near Braila when the larger fish come downstream to the delta lands. Millions of fish are caught in nets each year as the parent fish are finishing their long migration. Fishermen construct reed barriers across the smaller channels of the river about the time for the yearly migration. Finding their progress impeded, the fish congregate in large numbers behind the bars and fall an easy prey to the fishermen's nets. The fishing season lasts but a short time so that a type of net fishing has developed to make the most of it while it lasts. Fishing centers develop only where these methods can be used the easiest.

Farther down the river on one of the deltaic islands the center of another type of fishing has developed—the caviar. Here the fishermen catch the sturgeon by hooks either in the open sea or up some of the delta mouths adjacent to the sea. The Danubian delta fisheries help furnish the world with a caviar, sold under the name Russian caviar. In 1926 the caviar produced by the Rumanian State Fisheries amounted to nearly 110,000 pounds.

Not far away the largest fisheries of Rumania today occupy a coastal lake just south of the delta of the Danube—Lake Razelm. The production of fish in the one lake

reaches over 6,000,000 pounds per year. The government made the brackish lake fresh by cutting a channel from the delta to the lake so that fresh water reduced the salinity of the water and increased the plant life. With the increase of vegetable food the number of fish rapidly mounted until to-day it holds first place among the Rumanian fisheries.

Added to the commercial fisheries, the mountain streams and smaller rivers contribute their bit. They furnish fishing for the sportsman and help supply with food the local villages bordering their banks. The Rumanian government understands the value of the fisheries and wishes to conserve them for posterity. With control by the government the fisheries should continue to supply not only her own country with food but send out to all the world fish delicacies as they are doing to-day.

MANUFACTURING

Manufacturing in Rumania has not passed its infancy but has experienced almost a mushroom growth in some fields of industry. The refining of petroleum rose from almost nothing in 1875 to 855,542 tons in 1919 and to 4,886,974 tons in 1929. Metallic mineral manufactures advanced from 247,590 tons in 1919 to 452,340 tons in 1929. Iron manufacturing grew from 11,838 tons in 1919 to 72,346 tons in 1929. Not less indicative of growth is the development of industries along other lines such as textiles (19 factories in 1919, 511 establishments in 1929), foodstuffs (68 in 1919, 1,147 in 1929), and paper and lumber (42 in 1919, 163 in 1924).

Though the manufacture of foodstuffs stands far in the lead of all manufactures, the textile industry

has the greater outlook for probable expansion. Foodstuffs supply at the present time approximately 97½ per cent of the total consumption while the Rumanian textiles supply only 29½ per cent of the total textile consumption. The total consumption of textiles purchased in Rumania have an annual value of over \$115,000,000 or nearly three times that of foodstuffs. Textiles head the list of imports or 70½ per cent of the total consumption, while foodstuffs account for only 2½ per cent. Foodstuffs in Rumania are almost entirely a national product while textiles are principally imported. Among the foodstuffs flour, canned vegetables, and fruits outvalue all the rest and unless an expanding market develops, will not have the capability of expanding to any great degree. Not so with textiles—they have the prospect of almost infinite improvement. The industry could, if permitted, obtain all raw materials from native sources. To-day the sources have scarcely been touched. The manufactured textiles include wool, cotton, silk, jute, flax, and hemp. Before the war, textiles occupied sixth place among manufactures but since, they have risen rapidly until they now occupy third place. They may eventually take second place instead of chemicals, though first place cannot be reached so long as Rumania remains an agricultural country.

Among the long list of other manufactures of Rumania wood, paper, subsidiary wood products, skins and leather, glass, metal goods, pottery, and electric goods make up the bulk of the total value. Manufacturing, well regulated, can provide work for many people who have left the farms within the last few years, and

can form a steady outlet for the utilization of Rumania's raw materials. Not only can the industries supply the home market but they should be able to find markets for their manufactured goods in neighboring states that demand such articles, and thus bring about a much more independent financial status of

a bright future if they are properly managed. All is not in her favor, however. The greater share of her people are farmers and have in their hands the keeping of her greatest wealth, the soil. When one considers that the greater share of the people are poorly educated and, in general, ignorant of modern methods

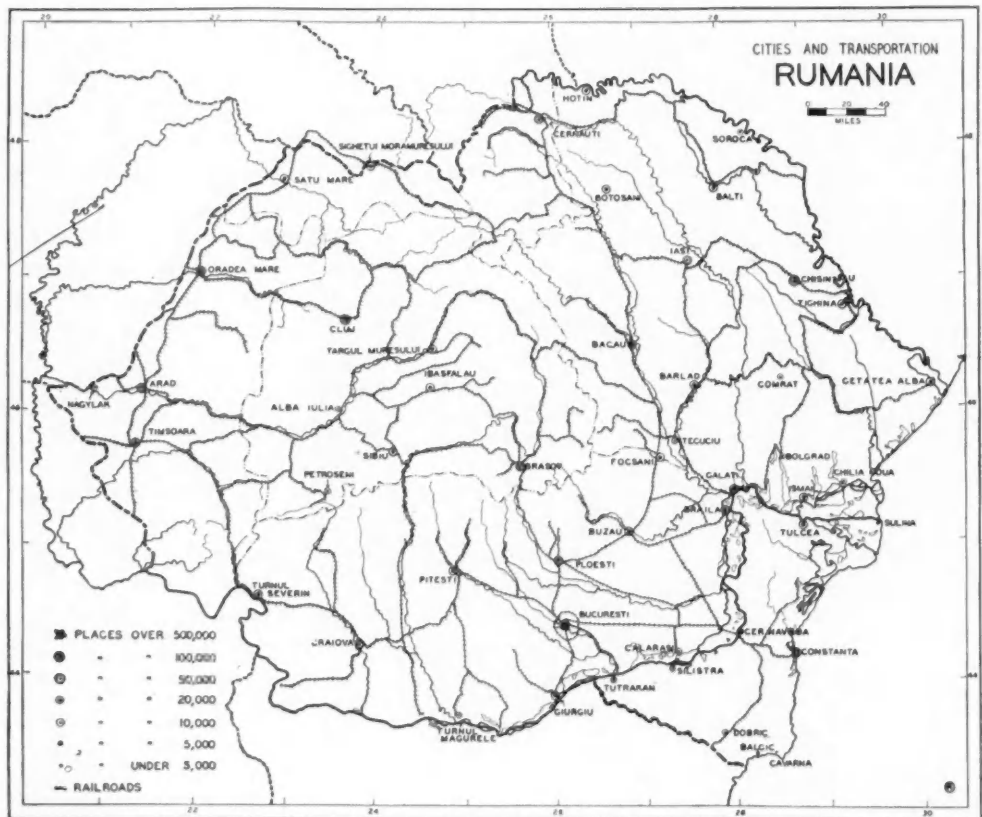


FIGURE 11.—Railroad lines pierce the Carpathian Mountain arc in five places. The deep carved river gorges furnish a low divide for the railroads to follow. Rumania lacks a main railroad center and a uniform gauge for the railroads so the net is not as efficient as it should be for collecting and distributing goods within her borders.

the country as a whole and that of the individual citizen.

CONCLUSION

Rumania has a richer endowment of natural resources than most countries of her size. Her economic resources considered alone prophesy

of farming, and have very low buying power, the importance of a national policy of education is realized. The country's strides forward in commerce and industry make it just as necessary that the schools be universal and open or obligatory for all. Transportation facilities need atten-

tion in order that goods can be marketed advantageously. To-day the railroads in several parts of the country belong to different gauges and show that formerly they were not built as parts of a whole. The plan of the railroad net, if it can be called a plan, is not adequate at the present time to carry on commerce within the borders of the new nation. The physical and ethnic complexity of Rumania connotes of dissatisfaction and a minority problem of no small proportion. Added to the problems of education, transportation, political and ethnic diversification is the possibility of a failure in the successful solution of the expropriation policy. Will the peasants with no capital, no machinery, little or no education, be able to work out a method for control of their small lands whereby they can produce superior instead of inferior products and win out against the odds against them not only in their own country but in competition with other nearby progressive states? Or will they in failure have to go into debt and eventually lose their lands to a money lender? In case of failure to hold their lands will they

not be worse off than before? In the drier regions where their lands are the most susceptible to drought can they join a collective or coöperative farm as in Bessarabia or must they struggle on alone barely earning a subsistence? Without increased buying power can they support the manufacturing industries of the country to the extent that they must be supported by the Rumanians if they are to succeed? Can the Rumanian government take care of all the problems demanding attention and instill in the people a great desire for success so that it may conquer the seemingly unsurmountable tasks? It may and will probably take years to accomplish the needed reforms. Rumania is encouraging the coöperation of her citizens and neighbors in attempting an extended national educational program, in rebuilding and replanning her railroads, and in fostering industry, looking forward to a time when she can reënter the arena of influence in western European markets that she enjoyed before the war or add to her power by opening up an entirely new route to success through expanding markets to the east.

ECONOMIC CONDITIONS IN ALBANIA

Joseph S. Roucek

FROM political and international points of view the importance of Albania is obvious from the news of the day. Albania forms the eastern gateway to the Balkans, and commands the entrance to the Adriatic Sea. This location lays upon Albania a strategically very important place among the Balkan States; in addition, the trade, as well as the position of Albania, makes the state of greatest interest to Italy. Albania is not so large as New Hampshire and Vermont together; its area is about equal to that of Denmark (11,600 square miles). The economic situation of the country in its present stage is backward and difficult.

ECONOMIC BACKWARDNESS

The present phase of economic progress of Albania indicates an economic status rather tardy and unprogressive, though great strides have been made since the World War and especially under the present King, Zogu. It is not wise, however, to be too hasty in judgment, considering the influence of geography and especially of historical events. The domination of the Turks has left not only material but psychological imprints as well. The lack of communication, and the resulting lack of trade and contacts, preserved the primitive customs and the non-coöperative spirit of many of the leading tribes of Albania. Last, but not least, it must not be forgotten that Albania has been overrun many times by foreign armies and that the almost

perpetual state of warfare up to the end of the World War was not conducive to economic development, or any thorough coincident educational activity. The Turkish masters were always afraid of the irresponsible Albanian elements and did not allow education in the Albanian language. Thus, under present conditions, Albania must catch up with the progressive requirements of Europe, and pay for the past with heavy sacrifices in the present. Much is required of the Government of Zogu, in attempting to make the people forget that personal reputation now depends more on being an energetic worker rather than a good fighter. The necessity of a faithful and exhausting program to develop more fully the resources of this country is the present duty required of every Albanian citizen.

COMMUNICATIONS

From the viewpoint of communications, Albania probably has the most defective system in Europe. It was only during the World War that the Austro-Hungarian armies of occupation laid down the basis of the present roads. At the end of the war Albania had built the nucleus of a well-engineered road system and had acquired a knowledge of motor transport. Subsequently, the Government, invoking the principle of *corvée*, made all citizens devote six days every year to road work, or pay progressive taxes; tribes known for their revolutionary leanings or practices were made to devote more days to this task.



FIGURE 1.—Though most of Albania is mountainous, a number of the coastal plains and inland valleys afford some level land for a considerable amount of agriculture. (Courtesy of Roberto Almagia and P. Cremonese. Taken from "L'Albania" by Roberto Almagia, published by Paolo Cremonese, Rome, 1930.)



FIGURE 2.—Lake Ochrida, back from Durazzo, is one of the lovely inland bodies of Albanian water. It is one of Europe's picturesque spots. (Courtesy of Near East Foundation.)

Thus the Tirana-Scutari road was repaired, and the connection between Durazzo-Valona reconstructed with the connecting roads to Berati and Elbasani. About \$200,000 is being spent annually, and new roads are being constructed or planned for, such as a direct route from Tirana to Korça (Koritsa), especially since 1925. The greatest difficulty is that substantial bridges are still lacking, so that during the rainy seasons there are no connections between the sections of the roads lying between the rivers. Several large bridges are, however, being completed and numerous small ones have already been constructed. The opening of the Zogu bridge in 1927 made possible the communications during the wet season between Scutari and the rest of Albania. The Durazzo-Elbasan-Koritsa road, nearly completed, will form a direct route from Durazzo to Monastir and Salonica. In 1929, 1,380 kilometres of roads were completed.

The most effective means of communication between the northern,

middle, and southern parts of Albania are the maritime lines connecting San Giovanni di Medua, Durazzo, Valona, and Santi Quaranta (Saranda).

No railroads of normal gauge have been built in Albania. The roadbed of the proposed Tirana-Durazzo railroad is now being constructed.

There are no harbors of importance in Albania. The coastline is low and sandy and in view of insignificant exports no future construction is necessary. Because of shallow water, no ships can anchor at the shore; the goods and travelers must be transported to and from shore in primitive boats of the natives. While Valona is the best natural harbor and has an anchorage of naval importance, Durazzo is the chief center of trade. The maritime connections are provided by Italian and Yugoslav companies. Three other companies call at the Albanian ports regularly while six other lines call at intervals. With the exception of the Boyana, the only navigable river in Albania, the rivers can

be used only for floating logs and rafts and for developing power. Small boats connect, nearly the whole year around, Scutari and the port of San Giovanni di Medua. The air lines of the Adria Aero Lloyd Company reach the main towns of Albania.

AGRICULTURE

Contrary to popular opinion, Albania is not only mountainous, but also boasts of ample fertile plains on which the future of Albania depends for its agricultural production. Professor A. Calmès, delegated by the League of Nations in 1922 to study the economic conditions of Albania, estimated that not more than 10 per cent of the arable land was cultivated at that time. Agricultural districts are located, in general, on coastal plains, the borders of great lakes, on



FIGURE 3.—Land utilization on the mountainous slopes about Berati recalls the landscape of Wales or the hilly sections of England. Soil erosion has been active because of deforestation. (Courtesy of Near East Foundation.)

the elevated plains south of Scutari, and in the regions of Tirana, Elbasani, Berati, and Delvino. The farming belt of highest fertility stretches from the Boyana River to the Bay of Valona, though much of this territory is marshy and harbors anophelene mosquitoes, which spread



FIGURE 4.—An unusual Albanian custom of shocking corn in a tree the better to dry it and protect it from marauding foragers would surprise an Illinois or Iowa farmer. (Courtesy of Near East Foundation.)

malaria. The methods until recently were very primitive and the control of rivers and the reclamation of swamps would add thousands of acres of fertile land for production. The State itself owns, besides others, more than 50,000 hectares of the best land between rivers Viosa and Shkumbini. The Government is attempting very seriously to introduce more modern methods of cultivation; the iron plough is being used in Southern Albania, and the Albanian-American School of Agriculture has been established at Lushnja (between Berati and Durazzo), in the fertile district of Cavaia. The state boarding school in Gjinokastrë also gives its interest to agriculture as do the two private agricultural schools and Italian model farms. The Ministry of Agriculture, later called the Ministry of National Economy, was founded in 1927. A Veterinary Department was established in 1928; it imports stock for breeding purposes, and farm machinery. Agriculture is now a compulsory subject in every school. Irrigation canals in the Kavaja and Lushnja districts are being constructed.



FIGURE 5.—The pastoral industry of Albania occupies the attention of the major part of its agricultural population. (Courtesy of Near East Foundation.)

The Agrarian Reform Law of April 17, 1930, divided the properties of the Moslem landowners (Beys) in the lowland districts, leaving the maximum of 40 hectares to each landowner, with 5 hectares additional for his wife and each child. The division will be supported by the financial means at the disposal of the National Agrarian Bank. It was estimated that before the reform one-third of the arable land belonged to the state, the second to the Beys, and the remaining third to small peasants. It is interesting to note that most of the fertile plains of Central Albania were owned by these large landowners, while freehold was largely limited to less desirable regions. The landlords and the state do not administer their estates directly, but rent parts of land to small peasants, and often leave enormous districts uncultivated. The agricultural tax

usually consists of one-tenth of the production and the renter pays about one-third of the production. The effectiveness of the farmer is slight. He is handicapped by such ailments as malaria; by extreme heat in summer; and by insufficient food.

When the weather is more favorable, the peasant can raise two crops. Wheat is sown especially by large proprietors, in the southern part of the country, where the soil is dry and the rains periodical. The principal product is maize, used for feeding domestic animals and also as the food of the people. The imports of wheat and corn, however, usually exceed the amounts sold abroad. Oats and barley are grown in small quantities only, as are rice, cultivated mostly around Durazzo, peas, beans, other leguminous products, flax, and cotton.

The cultivation of tobacco, though just begun, is widespread in the districts of Elbasani, Gjinokastr, Lushnja, and Scutari. The Government is trying to raise the standard of cultivation and handling; Greek experts are employed for this purpose. The industry is protected by high protective duties; no taxes are imposed upon it.

The fruit trees could bring in large crops as in other Balkan states. Olive oil and olives are some of the main export articles of Albania. They are grown mostly in the districts of Gjinokastr, Elbasani, Vlona, Berati, Scutari, Durazzo, and Tirana. The pistachio, pomegranate, apple, orange, lemon, almond, fig, hazelnut, wild pear, and mulberry are also grown, in addition to grapes. Vine-growing is on a low level, qualitatively and quantitatively. Attempts are being made to revive the silk industry, and mulberry saplings,

seed, and silkworm eggs are imported for the districts of Scutari and Gjinokastra.

Cattle are few, and mostly of the degenerate type. Better types are found in northern Albania, where there is an abundance of good alpine pasturage. Better grades of cattle and horses may not be exported. Albanian horses were famous and sought after in the Middle Ages. Draught horses are now raised in

ing because the Greeks are transferring their activities to Italy.

FORESTS

The forests cover great portions of land, but their acreage is not known. Most of them belong to the state, less to the communities, and a small part to individuals. Juniper, maple, and box are found on higher slopes; beech, chestnut, and conifers grow lower, evergreen-oak instead of beech grows



FIGURE 6.—Fruits, vegetables, and flowers thrive exceedingly well in many parts of Albania. The cherry market at Elbasan is primitive, but indicative of the size of the fruit. (Courtesy of Near East Foundation.)

Scutari. Herds of goats and sheep of good quality are numerous. Hog raising is limited to the Christian regions of the north and the south. Poultry is abundant everywhere, and eggs are exported. The raising of geese and turkeys is especially profitable. Production of white cheese, one of the leading exports, is declin-

in the south. The forest wealth has not been systematically cultivated and exploited thus far. The Government is willing to grant private concessions. The abundance of timber undoubtedly presents great possibilities for future wealth.

The waters of Albania abound in fish, Lake Scutari being widely known.

MINERALS

The deposits of minerals are not yet systematically estimated, though various projects of this kind were carried on during the World War by the armies of occupation. Petroleum, gas, and asphaltic rocks are deposited in the coastal region between Valona and Durazzo. The Korça region has some deposits of petroleum. Since 1923 international interest has been awakened and the Government has granted concessions to Italian, English, American, and French companies. Coal, mostly of good quality, is found in a number of places (near Tepeleni, Korça, Tirana, and on the Kraba Pass). Iron pyrites appear in four large beds in Fani (Mirdita); iron ore is also located by the Drini River, in the district of Gjinokastrë, and in the mountainous region of Gribba near Valona, together with magnetite and hematite. Copper ores and pyrites appear in large quantities east of Scutari and in the district of Korça, together with chalcopyrites and manganitic magnetites. Asbestos exists largely near Korça. Gypsum is plentiful throughout Albania, especially at Vlona. Other minerals are reported in northern Albania, and around the Lake Ochrida. Building materials are abundant, especially in central Albania. Cement sand is plentiful around Alesio and Vlona.

INDUSTRIES

If the industries associated with agriculture are excluded, such as cheese making, olive pressing, and flour milling, manufacturing beyond the development in cotton textiles for the local market is comparatively unimportant in Albania. Cotton manufacturing supplies approxi-

mately 75 per cent of the clothing worn by the population. Otherwise Albania can boast only of small factories for cigarette making, and for making conserves from tomatoes and olives, besides a few smaller mills, distilleries and wool spinning plants. Trades are also on a low level. A small tanning industry uses primitive methods. Shoemaking, on the other hand, especially of the better kind, corresponds in degree of expertness to that in other parts of Europe. The building trade needs skilled masons. Skilled men are needed also in other trades, such as gardening, baking and candy making. The slaughter houses in all smaller towns lack ice and cellars. The Albanian is a very clever metal-worker of gold and silver ornaments. Domestic cotton and woolen fabrics, as well as some silk stuffs, appear in large quantities; the peasant costumes, when not made at home, are produced in the districts of Durazzo and Cavaia, while the Muslims are proficient in producing embroideries in cotton, silk, and gold threads.

COMMERCE

The internal trade does not correspond at all to the needs of modern industry. The lack of communication characteristic of the Turkish rule, is a problem which is being solved gradually; and the low, primitive way of living was the handicap of commerce, as have been the Mohammedan traditions preventing the local landlords from imitating the western way of living. Hitherto the land can hardly be said to have possessed specialized commercial houses and stores. Most of the establishments deal in all kinds of goods and the greatest stores resell their merchandise to somewhat smaller stores.

Most of the merchants deal directly with Italian middlemen from Bari and Brindisi, and only a few of them make their business trips to Trieste or Vienna. The Italians and the Germans are especially anxious to make business connections in Albania.

Foreign trade during 1929 was estimated at 38,500,000 gold francs (\$7,430,500) for imports and 14,500,000 gold francs (\$2,798,500) for exports, an increase of 19 per cent in imports and a decrease of three per cent in exports as compared with the 1928 totals. Many of the foodstuffs, so necessary for the visiting foreigner, are either lacking or imported in cans, such as butter, fat, refined olive oil, and better varieties of cheese. Sugar is highly desired due to the native weakness for black coffee and sweet foods in general. Domestic flour is of poor quality, with the exception of the products of a factory in Scutari; the better products must be imported, especially from Italy. Canned olives and tomatoes are made in two smaller factories at Durazzo and Vlona. Wines lack quality, and only special kinds of wine, because of high tariffs, are imported. Beer from abroad sells well in spite of high prices. Foreign mineral waters are especially in demand due to the lack of good drinking water. Better leather products come from Vienna or Italy, for the custom of carrying weapons provides a lively trade for leather belts and revolver covers. Shoes, produced at home, are absorbed by the local market, though the mountaineers and poorer classes wear *opankas* (sandals) of their own making and the army uses European military shoes.

Wood for building and furniture comes nearly entirely from Yugo-

slavia. Consumption of paper is heavy, though not paper for news papers, and the supply is imported from Italy and Austria. Cigarette paper is a state monopoly and is produced by the largest cigarette factory at Durazzo. Matches, also a state monopoly, originate mainly from Sweden. Better woollens are imported from Italy, as well as laundry and cottons. The natives wear fezzes almost exclusively, the production of which is one of the most extensive domestic industries. The foreigners and the Albanian intelligentsia wear Italian hats. Glass, imported from Czechoslovakia, Italy,



FIGURE 7.—The village of Peking, near Kavaja, Albania, portraying native construction of wicker corn crib and reed and rubble houses. (Courtesy of Near East Foundation.)

and Austria is increasing in consumption. The increased building activity in Tirana reflects on foreign imports of iron. Trade implements are made in Scutari. The machinery is ordered in individual cases only, but better methods of the peasants should make this phase of trade very important. Chemicals are nearly all Italian. The chief imports, according to their value, are as follows: cotton and cotton goods, wheat and corn, sugar, benzine and kerosene, iron (sheet, wares, etc.), wool and woolen goods, coffee, rice, steam en-

gines, dynamos and other machines, automobiles and accessories, leather for shoes and harness, lumber, paper, cement, flour and corn meal, ready-made clothes and hats, tires and inner tubes, lubricating oils, glass and glassware, beer, wines and other alcoholic beverages, medicines, paints and dyes, fruits and vegetables, naphtha, wooden furniture, electrical supplies, linen, jute, and hemp goods, silk and silk goods.

In 1928 imports came chiefly from Italy, which furnished 48.4 per cent (62.6 in 1927); United States, 8.2 (4.1); Czechoslovakia, 7.4 (5.6); United Kingdom, 6.4 (7.2); Greece, 5.8 (4.9); and Yugoslavia, 5.7 (5.1). It might be interesting to notice that imports from the United States in 1928 were valued at 2,651,053 gold francs (\$511,650), or 8.2 per cent of total, as compared with 1,004,596 gold francs (\$193,890), or 4.1 per cent, in 1927. Imports from the United States consist chiefly of automobiles, pharmaceutical products, sewing machines, agricultural implements, typewriters, and pumps.

The main exports were, in order of

value in 1928, skins, cheese, eggs, agricultural products, livestock, olive oil, wool, charcoal, firewood, fish, asphalt, beeswax, tobacco, and cigarettes. In that year exports went chiefly to Italy, which took 61.4 per cent of the total (56.7 in 1927); Greece took 19.6 (22.7); and the United States, 16.0 (16.2). Yugoslavia, Egypt, France, and Italy also import Albanian goods. Cheese is the principal export to the United States and the exports totaled in 1928, 2,362,000 gold francs (\$445,870), or 16.0 per cent of total, as against 1,798,690 gold francs (\$347,150), or 16.2 per cent, in 1927.

SUMMARY

The backwardness of Albania is largely due to the retarded development of the resources of the country. Evidently much remains to be done in the future, though Albania in this respect is absolutely dependent upon foreign support and capital, and domestic stability, which, at the present time, seems assured under the rule of the young and enterprising King Zogu.

BEAN PRODUCTION IN MICHIGAN

Bert Hudgins

LEGUMES constitute a larger part of the diet of many people in foreign countries than is the case in the United States. There is a tendency throughout this country to increase the use of fats and proteids from plant products and substitute these for a part of meat in the diet. Since beans, peas, and peanuts are high in proteids and oils, the use of these legumes is in-

edible beans. The first five states of the union in order of production are Michigan, California, Idaho, Colorado, and New Mexico.

The bean production of the state is interesting from another angle. It comprises 90 per cent of the nation's white pea beans, 50 per cent of the red kidneys, 30 per cent of the large white, but only a small amount of the pintos, limas, black eyes, and

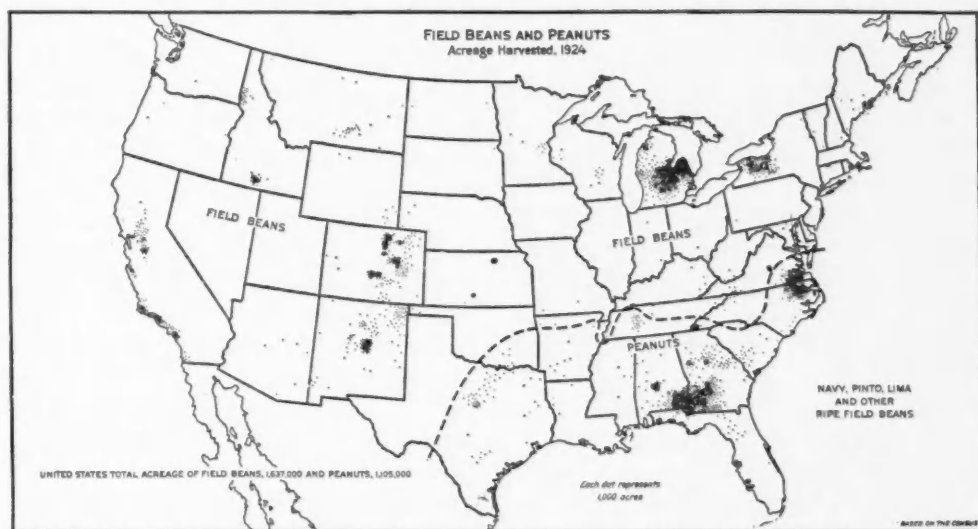


FIGURE 1.—Distribution of production of field beans and peanuts in the United States. (Courtesy of U. S. Department of Agriculture).

creasing. Peanuts are produced in the southeastern states, white bean production is centered in Michigan and throughout several of the North Central States, and limas, pintos, and Mexican beans are grown in the southwest (Fig. 1).

The United States is practically self-supporting in these crops, and Michigan has been the leading bean producer for several years. It produces one-third of the nation's dry

others (Fig. 2). The western states are the large producers of pintos, limas, and mexican beans, all of which are adapted to dry climates. Michigan is best suited to the production of the white pea bean, or navy bean, in which it excels by ten times New York State, its nearest competitor.

The navy bean is easily recognized from all others. It is white in color, usually oval in shape, and about the size of a kernel of corn. It is the

bean that the East has made famous as "Boston Baked Beans," and that most people know as the important ingredient in canned "Pork and Beans."

The production of this bean has increased greatly in Michigan within the last twenty-five years. It now ranks third or fourth in value among leading crops of the state. The maximum production was reached in 1925 with 8,290,000 bushels. This large crop was due to a favorable

Oakland County produced a crop of 35,000 bushels in 1850. After that date, production spread northwards and into the Saginaw lowland, where it seems destined to remain. Saginaw, Shiawassee, Clinton, Gratiot, Tuscola, and Huron Counties are leaders in beans. There is light production throughout the remainder of both peninsulas, but no county in the northern peninsula has yet reported a 35,000-bushel annual crop (Fig. 3).

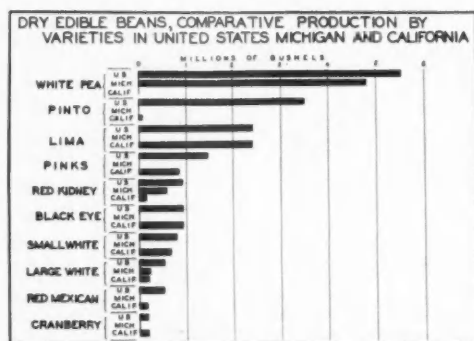


FIGURE 2.—Comparative production of all varieties of dry edible beans in the United States, Michigan, and California. Note the great percentage of white pea bean production in Michigan.

growing season of that year, and also to an increased acreage encouraged by high prices of the previous year.

Because of the rapid rise of bean culture and its importance as an agricultural crop in the state, and because of the probable future increase in the use of beans as food, it is important that the factors, environmental and economic, that are influential in bean production be analyzed.

DISTRIBUTION

Navy beans are of American origin. The first white men in the New York area found Indians growing them.

The production began early in Michigan in the southern counties.

FACTORS IN PRODUCTION SOIL

Soil is an important physical factor in bean production. The distribution of production by decades since 1850 shows a final shift to the heavy clay soils and loams of the Saginaw lowland (Fig. 4). Contrary to a general belief, beans do not thrive in thin sandy soils that are too poor for other crops. Michigan has a great variety of soils on its glacial surface where the retreat and readvance of the great ice tongues mixed sands, gravels, and clays, and where swamps have contributed additions of humus, so that now the drained areas particularly in the Saginaw lowland offer the best soils for beans. The thin, sandy, gravel soils of the thumb upland do not produce beans well, as can be seen by light distribution in southern Lapeer County and southwards. The Plainfield loamy sand is a good representative of this thin type of soil frequently encountered in the thumb upland. It is well drained, but dries out excessively during droughts. It does not, therefore, produce a vigorous plant growth unless fertilized heavily with barnyard manure.

The Brookston silt loam is one of the best bean soils. It has high fer-

tility, but needs tile drainage, and care must be taken not to work it when wet since it packs, and is very sticky. This is the main soil of the Saginaw lowland (Figs. 5 and 6).

CLIMATE

The warm moist summers in Michigan are generally favorable to the development of the bean blossom and pod, and hence to bean production. There is sufficient cloudy weather to prevent intensive sunlight from injuring the plant, and there are generally enough dry days in September to permit of harvest and threshing

the crop. An analysis of the influences of minor variations of temperature and precipitation throughout the cropping and harvest season brings out the dominant influence of climate in bean production. Twelve weather stations in the area furnished data for this study.

The plant requires 120 days of frost free season. The Saginaw lowland has from 140 to 150 days of growing season throughout. April to September inclusive is the season for beans, and these months show wide variations in temperature and precipitation from year to year.

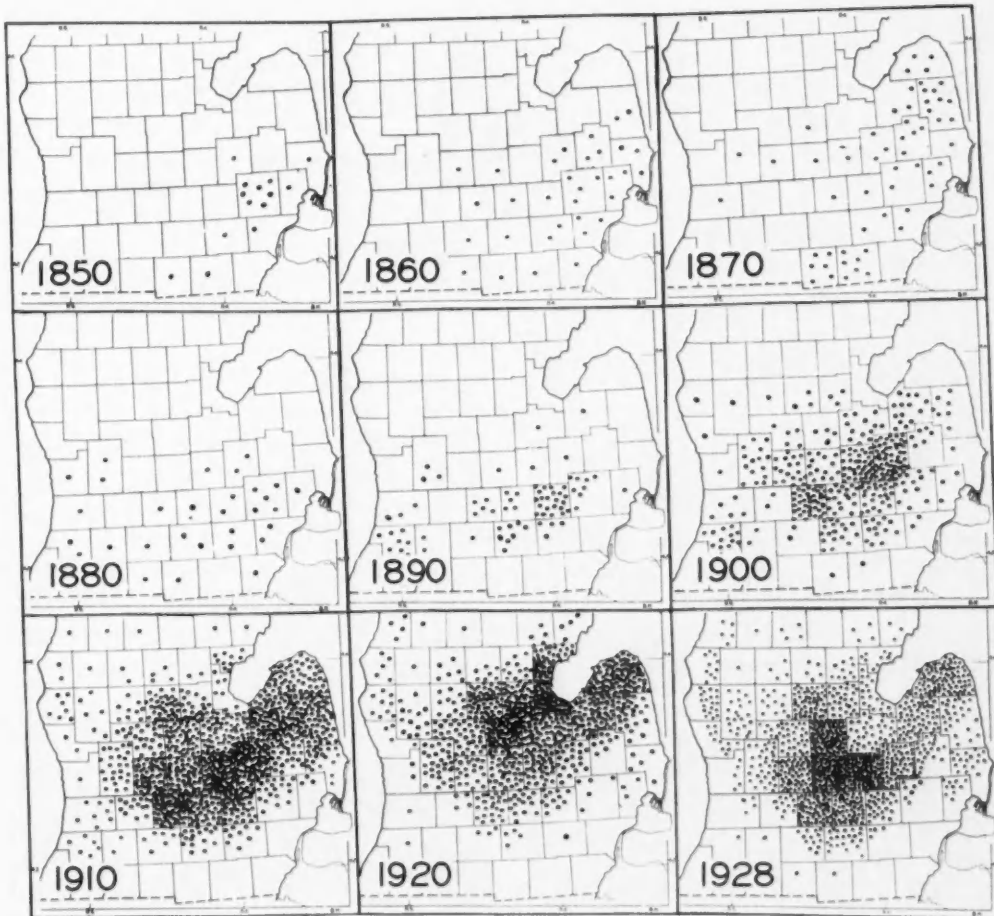


FIGURE 3.—The distribution of production of beans in Michigan by decades since 1850. Notice the spread of the area of concentration into the thumb and Saginaw Lowland. Each dot represents 5,000 bushels.

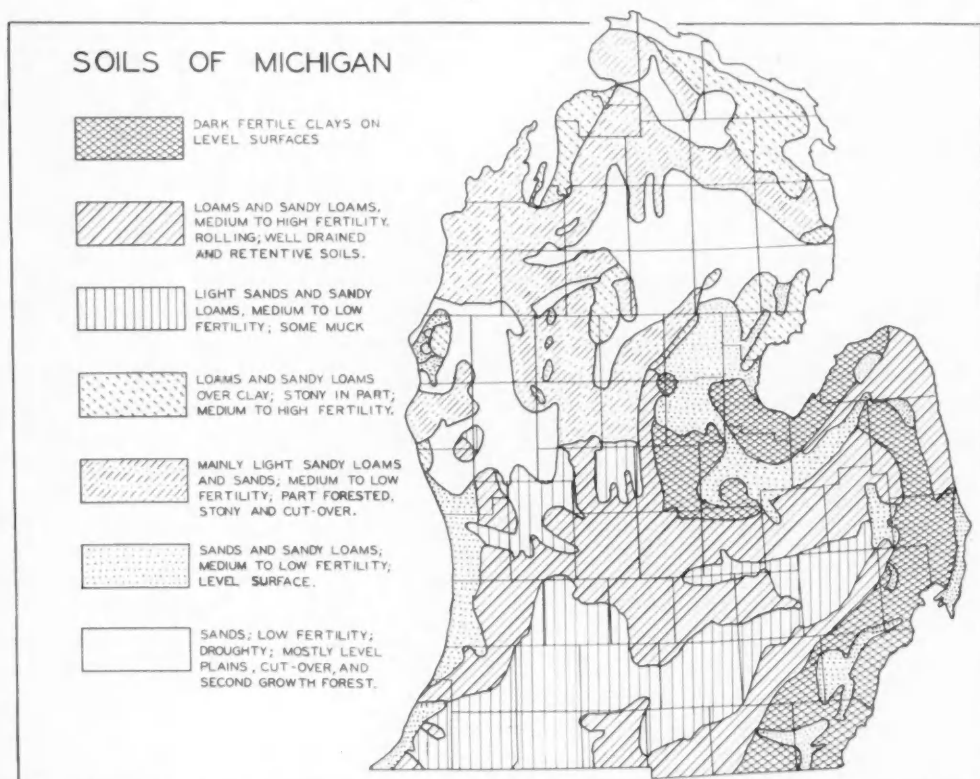


FIGURE 4.—Generalized soil map of Michigan. Note the predominance of the better soils in the Saginaw Lowland.

Note the predominance of the better soils in the Saginaw Lowland.

The month of May has in some years had $7\frac{1}{2}$ inches of precipitation, and in other years only $1\frac{1}{2}$ inches, when the average is $3\frac{1}{2}$ inches. September, the month of harvest, averages $2\frac{3}{4}$ inches precipitation, but in some years it has had as much as $6\frac{1}{2}$ inches, and in other years as little as $\frac{3}{4}$ of an inch. Likewise the temperature varies with years. On one occasion the month of July had a mean tem-

perature of 82° F. for the average of all stations in the bean region, while in another year the mean monthly July temperature was only 58° F.

Such variations from year to year affect the bean crop. A composite chart for climatic conditions April to September inclusive from 1920 to 1930 makes this clear (Fig. 7). In 1922 precipitation was about normal except for September, the harvest



FIGURE 5.—Lack of vigor in growth of bean plants in Plainfield Sandy Loam soil in southern Lapeer County, Michigan.



FIGURE 6.—Vigorous bean plant growth in Brookston silt loam in Saginaw County. Photograph taken same date as that in Figure 5.

month, when almost 5 inches fell. This was double the average for that month.

Statistics show that this wet weather for harvest resulted in only 450,000 acres harvested out of 509,000 acres planted. Many beans were damaged, and the "pick" of spoiled and colored beans after threshing was 8.5 per cent.

The year 1929 is instructive in another way. The temperature was high in July, August, and September, and precipitation was excessive for April, but did not interfere seriously with planting. July, August, and September were all quite below the normal in precipitation. Thus the spring and summer weather did not interfere with planting and cultivating, and the early fall was ideal for

harvest. The result was that 694,000 acres were planted and cultivated, and all harvested. Had the yield been up to normal this 1929 crop would have been sufficient to have produced a bearish effect on the price of white beans. But on account of the drought of July and August the yield was only 8 bushels per acre instead of the normal yield of 11 bushels per acre. Though there was some damage because of splitting of beans in harvest, there were no soiled nor colored beans and the "pick" was less than 1 per cent—the lowest in the history of this crop.

Wet weather during the cultivating period of June and July prevents tillage and encourages weed growth, and thus injures the crop.

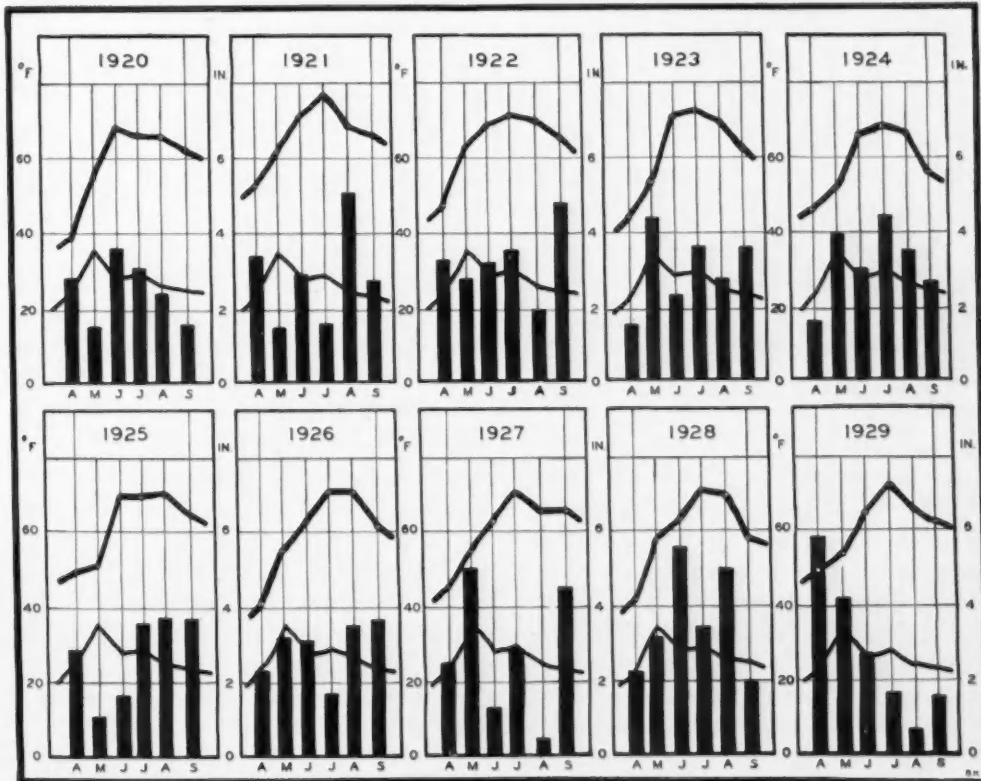


FIGURE 7.—Climagraph comparisons of monthly rainfall and temperatures from 1920 to 1929 inclusive.

It has been noted also that differences in weather conditions in the various parts of the bean region in a given season affect the crop. In 1928 rains were excessive in the east central part. It was noted that most loss of acreage planted and lowest yields were in the east central part. This results in a change in the pattern of amount of production from



FIGURE 8.—The largest bean elevator in the world at Saginaw.

year to year throughout the bean region. To look at the product map of 1928, one might judge that Saginaw and Bay Counties were no longer important producers of beans. But this is not the case. The 1928 crop was short in these counties because of excessive rains on their clay loam soils, resulting in loss by abandonment of acreage planted, low yields, and a high "pick" of soiled beans at harvest.

INSECT PESTS

The severity of the winters in the Saginaw lowland, where temperatures reach 20° F. below zero, serve as a check to insect pests. This is known to be the main check to the spread of the Mexican bean beetle. They freeze during the cold of winter. In the southern and eastern states where the winter freezes are not severe, this beetle has done great injury to bean crops. The insect not only attacks the green plants in the field but is able to pass the larval stage and complete the life cycle in dry beans in the bin, where winters are mild.

The Mexican bean beetle was first reported in Alabama in 1920. Its spread northwards has been slow, as was that of the cotton boll weevil in the cotton belt. The bean weevil was reported in southern Michigan in 1928, and it caused farmers great concern. It has spread but little since that date in the state, and practically no damages have resulted from its work.

HARVEST

Methods of harvesting and threshing the bean crop in Michigan are affected by climate. Commonly the plants are pulled and left in rows in the field a few days before threshing. Since rains and wet weather are likely to occur to damage the bean in the pod after the plants are pulled and are drying, farmers have adopted what is known as the McNaughton system of stacking beans. This is done by making a slender pile of the pulled bean plants, about 6 feet high and 3 feet in diameter resulting in only a few beans near the ground. The pile or stack is kept erect by driving a slender stake down through the

center and into the ground. This method insures proper drying before threshing, saves expense of turning over the crop by hand, and lessens the loss from high percentage "pick."

The ordinary grain thresher is used largely in the harvest of beans, but the harvester-combine has been introduced. The great probabilities of a moist harvest season in Michigan, which hinders drying, is not favorable for the use of combines as they are used in the west. Also pebbles and stones of many fields cause damage to the combine, so that the use of this machine is not likely to become general in the Michigan bean region. Whatever device is used in pulling and threshing beans, great care must be taken to prevent splitting, spoiling, or coloration in the pod.

MARKETING

When beans are marketed, they are graded for the percentage of soiled and split in the lot, and prices are paid according to the quality. Local markets consist of some 500 elevators scattered throughout about 10 counties of the bean region. It is said that Saginaw has the largest bean elevator on earth (Fig. 8). At these markets the buyer assumes the job of "picking" the defective beans from the good ones before they are shipped to the canneries and wholesale dealers throughout the country. Picking is done partly by machinery, but still largely by hand. Women are employed mostly for this work.

Beans are marketed during all months of the year, but as is the case with other grains, the threshing period and the few weeks following is the time of greatest marketing. October is the peak month for the shipping of beans, when more than 1000

car-lots are loaded on Michigan railroads. The low shipping month is generally August with 200 to 400 car-lots (Fig. 9).

Several factors affect the price of beans. The great war had a stimu-

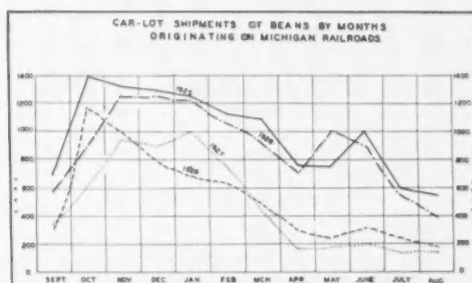


FIGURE 9.—The number of car-lot shipments of beans originating on Michigan railroads during the various months of the year.

lating effect upon it. Prices then rose from \$5.00 per 100 pounds in 1913, to \$13.00 per 100 pounds in 1917. In 1920 the price had fallen to \$5.00 per 100 pounds and, though fluctuating some, it has been above that figure since.

High prices result in large acreage plantings the following year and possible over-production. This is well illustrated in a study of Michigan bean production by years since 1920. In 1924 the state production was 6,300,000 bushels with a December 1 price of \$3.15 per bushel. Good profits were made by bean farmers. But in 1925 the acreage planted was larger, the production was 8,300,000 bushels and the resultant price was only \$2.95 per bushel.

In 1928 the price was as high as \$10.00 per 100 pounds, which resulted in 700,000 acres planted in 1929 as compared with 600,000 acres the year before in the state. But since 1929 was a year of drought, the yield was only slightly more than in 1928 (Fig. 10).

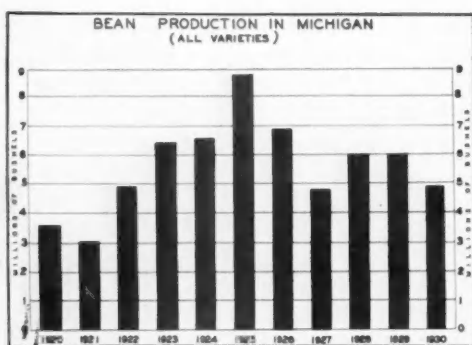


FIGURE 10.—Fluctuations in total annual production of beans in Michigan since 1920.

IMPROVEMENTS

Much attention is now given to bringing about increased profits from the bean crop. Something has already been said about the introduction of harvester-combines. Practices of spraying to combat blight and insect pests are becoming common. Considerable use is being made of "cull" beans as food for stock. When ground with corn, oats, or barley, the "cull" beans add much protein and make an excellent food for dairy cattle. Bean hay is also stacked after the thresher and used later for cattle feeding.

The practice of crop rotation results in increased bean yields. A small grain one year, followed by sweet clover or alfalfa to serve as green manure the next year, results in a large bean crop the third year.

CONCLUSION

Michigan has extensive silt loam soils of the high fertility required in

bean growing. The growing season in the Saginaw lowland is everywhere well above the 120 days required for beans, and the severity of winter freezes checks the insect pests.

The importance of moisture and temperature can be seen by studying the effects of minor variations of those conditions from year to year on the annual production which fluctuates from year to year (Fig. 10).

If April and May have excessive rainfall it results in low acreage planted, because farmers cannot work the wet loam soils of the bean area. If July and August are excessively dry, the blossoming of beans is checked and production thereby lowered. If June is wet, cultivation is impossible, and weed crops thrive with a result of abandonment of considerable bean fields. If August and September are rainy, threshing is handicapped, many beans spoil in the pod, resulting in high percentage "pick," low grade beans, and low prices.

Bean growing has made recent advances because of good seed selection, soil preparation, rotation of crops, and the use of "cull" beans for dairy cattle feeding.

With continued attention to these, and to harvesting and marketing methods, Michigan promises to maintain its leadership in the production of navy beans. Climate and soil will remain the important factors in production.

DISTRIBUTION OF THE MEXICAN BEAN BEETLE

George E. Harding

FOR more than seventy-five years the Mexican bean beetle (*Epilachna corrupta*) has been known to exist in the Southwest. Its original home was unquestionably in southern North America from Mexico to Guatemala, where it has been known to exist for a long time. Its first appearance in United States was in the Southwest about 1850. Up until 1920 the infested area was confined chiefly to the states of Texas, Arizona, New Mexico, Utah, and

CLASSIFICATION

The Mexican bean beetle is truly a beetle, an insect of the order Coleoptera which means sheath wings. These hard-winged insects have two pairs of wings. The first pair is horny and the wings meet in a straight line down the back. The second pair consists of thin membranes and are carefully folded away under the first pair of horny wings. This ravenous creature might, to the casual observer, easily pass for our native beneficial lady-bird to which family it rightfully belongs. The lady-bird family (Coccinellidae) and the known species in this country, are all beneficial except the Mexican bean beetle and the squash lady-beetle (*Epilachna borealis*). So far the Mexican bean beetle has never been known to eat other insects. In many ways it resembles more closely the large family of leaf eating beetles (Chrysomelidae) than the Coccinellidae.

LIFE HISTORY

Early in the spring, late in March, or early April, just as the earliest garden beans are coming up, the adult bean beetles begin to leave their winter hibernation quarters. After feeding a few days, the female beetles deposit eggs on the under side of the leaf of the bean plant. From 40 to 60 orange-lemon colored eggs are deposited in a compact cluster and the leaf serves as a protection to the eggs by concealing them from predatory insects and by protecting them from the direct rays of the sun, which, through experiment, have been found to prevent a perfect hatch.



FIGURE 1.—The eggs, pupa, and adult of the Mexican bean beetle (*Epilachna corrupta*) and four stages of larva development. The beetle is reddish brown while the larva is yellow and covered with long, branched spines. (Courtesy of U. S. Department of Agriculture.)

Colorado. In 1920 it made its first appearance in Alabama and has since spread to all states east of the Mississippi River except Florida, Illinois, Wisconsin, Vermont, Maine, and Rhode Island. It has entered southern Michigan, crossed into Canada, and is now found along the north shores of Lake Erie and Lake Ontario (Figure 7).

The eggs which are deposited in the early part of the season require from ten to fourteen days to incubate. Later in the season, when the days are warmer, the period of incubation is shortened to about six days. The larval development in early spring is slow, but when summer advances the later hatch is able to complete its cycle of development from egg to adult in an average of 33 days. The larvae, on hatching from the orange-lemon colored eggs, are covered with long branched spines (Figure 1). They grow rapidly and when about one-third of an inch long and about half that wide pupation takes place. During pupation they are yellow in color and are attached to the leaves on which they pupate by the last larval skin,



FIGURE 2.—The beetles, similar to the common lady-bird beetles, are distinguished by the eight black spots on each of the outer horny wings. Both the adult and larva are voracious feeders, living for the most part on the underside of the bean leaves. (Courtesy of U. S. Department of Agriculture.)

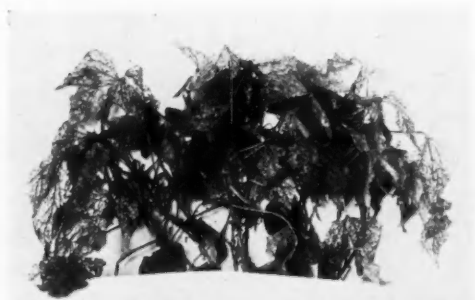


FIGURE 3.—Results of feeding of the Mexican bean beetles on a bean plant taken from a field which was entirely destroyed by these rapacious insects. (Courtesy of U. S. Department of Agriculture.)

which is white and spiny and covers the posterior abdominal segments. The adult or beetle emerges from the pupa in six to eight days. At first it is lemon colored and very soft. In a few hours the spots, eight in number and black in color, appear on each wing cover. In about 24 hours the wings are hard and in case food is not present the newly emerged beetle can fly away in search of food. Two weeks after the pupa stage the females begin to deposit eggs and continue a periodical production until late fall.

Only adult beetles live through the winter, hibernating most preferably in woodlands. They seem to be semi-gregarious in their habits. Where woodlands are not near, the beetle may fly many miles to find suitable winter quarters. In its native home in Mexico and Guatemala the beetle is active the entire year. In the milder sections of the Southwest beetles may be seen crawling around on warm days during the winter season.

The beetle appears sluggish in its movements but is relatively a good flier. In August the beetles become restless and begin to fly from field to field. It is probable that at this time migration is most likely. Marked beetles have been captured within



FIGURE 4.—To combat the beetle pests in the large bean fields, a mixture of magnesium arsenate is sprayed over the plants by means of horse drawn, power spraying machines. (Courtesy of U. S. Department of Agriculture.)

two days five miles from the point where they were liberated. Due to the prevailing direction of the winds in this latitude the migrating direction has been toward the northeast. It is thought that the northward advance of the beetle is attributable to the fact that the Mexican bean beetle is by nature a northern transition or sub-Boreal form, or is at least searching for conditions similar to those found in the higher altitudes of the Southwest and of the Mexican Plateau. The theory seems to be supplanted by the fact that there has been no appreciable spread of the insect south through Alabama and Georgia.

FOOD PLANTS

The Mexican bean beetle is decidedly a pest. Its choice food plants are the common beans, including the pinto, bush and pole varieties, navy, and all the genus *Phaseolus*. Since the introduction of soy beans as a hay and food crop, much damage has resulted in infested areas. Cowpeas are attacked when the bean plant is

not available. The degree of infestation on these two plants seems to vary greatly, particularly with the season, more real damage being done



FIGURE 5.—Another method of control recommended by the U. S. Department of Agriculture is the dusting of plants with a mixture of magnesium arsenate dust, either by a bellows type of duster for truck garden or small patches, or by a horse drawn duster for larger fields. (Courtesy of U. S. Department of Agriculture.)

in the latter part of the growing season. It is thought that the beggarweed (*Meibomia tortuosa*) has probably been a host plant to the beetle for some time. When food is scarce the beetle attacks this weed which serves as a food plant under adverse circumstances. The feeding of both the larva and adult is extremely characteristic. The larva, feeding from below, cuts away the lower tissue of the bean leaf in narrow parallel sections about the length of the body of the parasite. Between each section the larva leaves a portion untouched giving the leaf a peculiar net-like pattern (Figure 3). The entire plant above the ground even to the pods serves as food. So effective is the attack that a bean crop may be completely destroyed in about a month.

HIBERNATION

In the temperate zone the perpetuation of many of our insects depends largely upon the favorable conditions for winter hibernation. As is most

frequently the case, the adult beetle is the only stage which can survive the winters. Experience has proved that one very successful method of controlling insect pests, especially those which depend upon winter hibernation of adults for perpetuating their kind, is to clean up their places of hibernation. In the case of the Mexican bean beetle it chooses the woodlands and hedge rows or places where leaves have collected. Burning out these places has been found very effective in reducing the number of insects for the following year.

CONTROL MEASURES

Unfortunately the Mexican bean beetle in the United States has itself been exceptionally free from body parasites. Few predacious insect enemies have in nature been observed to prey on the beetle. In captivity, however, a number of insects such as the tiger beetle, lace-wing fly, and soldier-bugs feed on both eggs and larvae but these insects are too few, and some are seldom found in suffi-



FIGURE 6.—Untreated beans (light areas) destroyed by the Mexican bean beetle, beside beans sprayed with magnesium arsenate. (Courtesy of U. S. Department of Agriculture.)

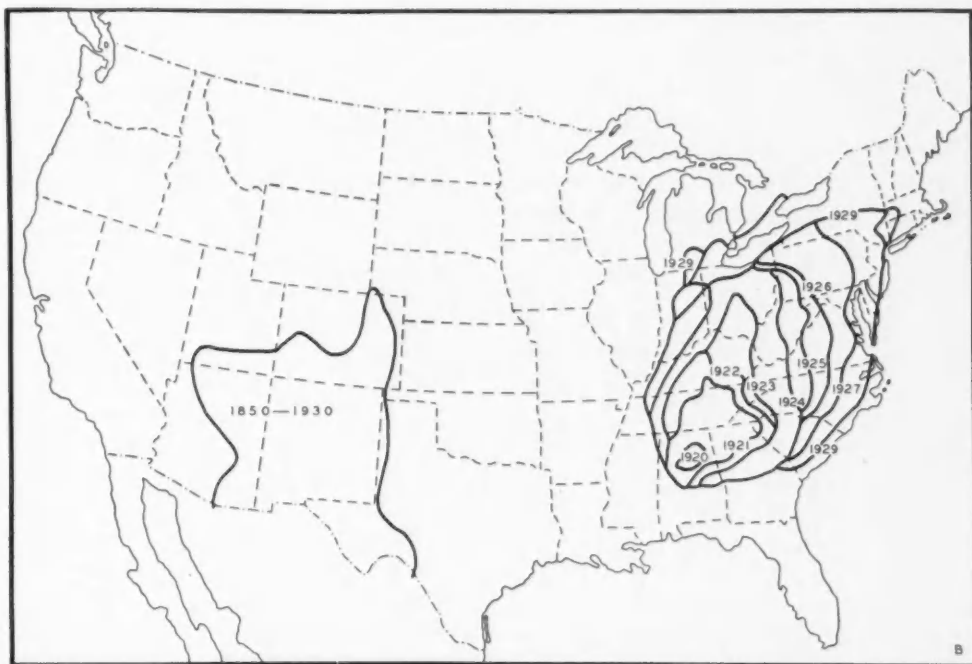


FIGURE 7.—The early known area of distribution together with the annual spread of the Mexican bean beetle in recent years. (The beetles are now reported in eastern Massachusetts.—EDITOR'S NOTE.)

cient numbers in cultivated fields, to be effective in helping to rid our fields of the pest. At present, it seems, the most effective method of fighting the pest is by direct control measures in the infested fields. Two methods of control have been tested and recommended by the United States Department of Agriculture, one a spray of one pound of magnesium arsenate and fifty gallons of water applied at the rate of ninety to one hundred gallons to the acre. The other method used is the dust method, which consists of a mixture of magnesium arsenate one pound and hydrated lime three to five pounds and applied by means of machines or by hand at the rate of about ten pounds to the acre. The chief objection to the use of the above controls are that they are both poisonous to mankind. However, if used as directed by the

Department of Agriculture, the danger from poisoning is negligible.

DAMAGE

The Mexican bean beetle is too new an insect in our country for us to make a very accurate estimate of the damage which has been done or will be done in all probability. In the Birmingham, Alabama, district it was found that this beetle removed 48 per cent of the bean foliage. It was also evident that a 40 per cent loss of leaves during the flowering time reduced the crop in direct proportion to the amount of defoliation. On the other hand, it was found that the green beans could stand a 25 per cent defoliation without an apparent reduction in the yield. In 1928 and 1929 the bean crop on 30,000 acres of dry beans in the eastern area of United States was valued at \$1,500,-

000. The remaining bean acreage in United States was devoted to green beans with a production of approximately 50,000 tons valued at \$3,500,000, a total for eastern United States of \$5,000,000. Twenty-four per cent of this amounts to \$1,200,-

000, and this might be considered as a rough estimate of the damage the beetle is capable of inflicting.

The cost of spraying to control the insect is about \$6.00 per acre which amounts to \$480,000 for the estimated 80,000 acres of beans.

MANUFACTURING IN THE FEDERAL DISTRICT, MEXICO

M. Ogden Phillips

THE city of Mexico and the Federal District present a sharp industrial contrast with the city of Washington and the District of Columbia. The District of Columbia is unique because of the almost complete lack of manufacturing; its business activities are entirely dependent upon the single fact

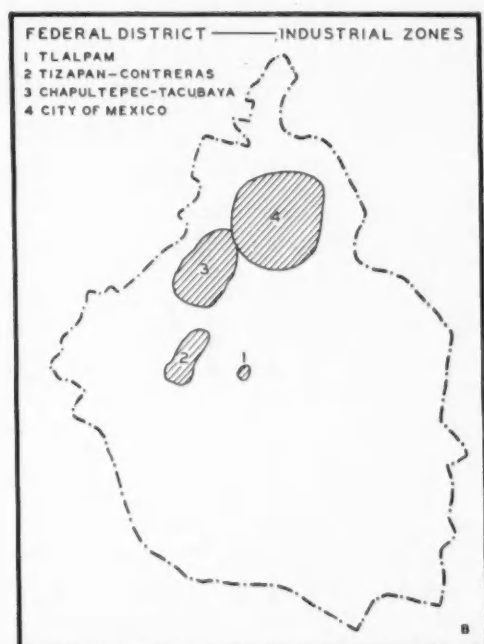


FIGURE 1.—Labor, capital, raw materials, and power are combined in the Federal District to make it the greatest industrial zone in Mexico. Its area of 573 square miles contains one-sixteenth of the nation's people and four distinct industrial districts.

that Washington is the seat of the national government. The Federal District, on the other hand, is much more than a governmental center; it is in reality the economic and industrial capital of the Republic of Mexico.

IMPORTANCE

Within the Federal District manufacturing is the principal occupation of the people; in fact, it is nearly twice as important as any other single occupation. The first industrial census of the Republic was taken in 1930, and it shows that of the 463,323 persons who were gainfully employed, 27 per cent were engaged in manufacturing. The Federal District is an urban agglomeration with a population of over 1,200,000 people, and it is to be expected that trade and various kinds of domestic service provide employment for many people. It is rather surprising to note, however, that agriculture within the District employs nearly as many people as the national government. Table I reveals the importance of a variety of occupations and, above all, the leadership of manufacturing.

TABLE I
OCCUPATIONS IN THE FEDERAL DISTRICT
(Census of 1930)

Occupation	Number of Gainfully Employed Persons	Per Cent of Total
Manufacturing.....	124,831*	27.0
Domestic Service.....	69,226	15.0
Trade.....	60,697	13.1
National Government.....	46,997	10.1
Agriculture, Fishing, Hunting, etc....	42,465	9.2
Transportation and Communication..	24,449	5.3
Professional Service.....	14,993	3.2
Mining.....	611	.1
Miscellaneous.....	79,074	17.0
Total.....	463,323	100.0

* Persons employed in manufacturing, according to this house to house census, include not only those who work in factories but also the large number of persons engaged in the handicraft industries.

The Federal District represents an area of only 573 square miles, but here lives one-sixteenth of the nation's people. It is the nation's

greatest market. Here labor, capital, raw materials, and power are combined to make the greatest industrial zone in Mexico.

The Census of 1930 clearly reveals the Federal District's share of the nation's manufacturing (Tables II, III, IV, and V). Here are to be found 7.1 per cent of the factories, which use 30.1 per cent of the raw materials, and 16.2 per cent of the fuel and electricity consumed in manufacturing. These establishments, representing 18.6 per cent of the total capital invested in manufacturing, employ 19.2 per cent of the workers and pay 29.8 per cent of the manufacturing wage bill. These factories, located in the Federal District, account for 27.3 per cent of the value of the nation's manufactured products.

TABLE II
THE FEDERAL DISTRICT'S SHARE OF THE
NATION'S MANUFACTURING
(Census of 1930)

Item	Federal District	Total Mexico	Per Cent in Federal District
Value of Manufactured Products (pesos).....	245,859,932*	900,322,923*	27.3
Capital Invested (pesos).....	182,323,452*	979,529,483*	18.6
Value of Raw Materials Used (pesos).....	100,880,096*	335,085,757*	30.1
Wages and Salaries Paid (pesos).....	53,901,177*	181,061,777*	29.8
Value of Fuel and Electricity Used (pesos).....	5,984,665*	36,917,345*	16.2
Number of Factories.....	3,476	48,850	7.1
Number of Workers Employed.....	61,001	318,763	19.2

* Note: 2.05 pesos (Mex.) = \$1.00 (U. S.)

Another index of the leadership of the Federal District as a manufacturing area is obtained by a comparison of the District and its leading industrial rivals, the states of Veracruz, Nuevo Leon, and Puebla (Table VI). The Federal District surpasses each of these states in value of output, capital invested, and number of workers employed. The percentage



FIGURE 2.—El Aquila tobacco factory is one of the most modern plants in Mexico and the labor policy is more advanced than that of the average American factory.

of the country's manufactures produced by each of these states is as follows:

Federal District.....	27.3%	of the total output
Veracruz.....	11.3%	" " " "
Nuevo Leon.....	7.6%	" " " "
Puebla.....	6.8%	" " " "

INDUSTRIAL ZONES

There are four distinct industrial zones, according to Professor José Luis Osorio Mondragón, to be found within the Federal District. The smallest of these zones is located south of the city of Mexico near the town of Tlalpam. Paper manufacturing is the chief industry in this area.

A second and more important region is the Tizapan-Contreras zone located southwest of the city of Mexico and not far from the hydroelectric plants along the Magdalena river. Here are establishments producing electric power, paper, textiles, and various other products.

A third region, adjoining the city on the southwest, is the Chapultepec-Tacubaya zone, which contains military industries producing arms and ammunition, cartridges, powder, and high explosives. Here also is located La Tolteca, the second largest cement plant in the country.

The fourth zone, which includes the city of Mexico and its immediate environs, is the most important one of all. Here are to be found railway shops, textile plants, iron and steel works, tobacco factories, chemical plants, breweries, flour mills, and many other establishments producing a wide variety of products.

PRINCIPAL INDUSTRIES

HANDICRAFT

First of all, mention should be made of the handicraft industries for which Mexico is so justly famous. The Department of National Statistics has no figures as to the number of persons engaged in the handicraft arts, but undoubtedly the number must be large.

Although the handicraft industries do not rank first in value of output, they are certainly among the most interesting of Mexican enterprises. Here in a land which has the antiquity of Egypt the traveler is intrigued with the myriad of products of manual skill which are offered for sale in the markets of Mexico City,—the brilliant sarapes and blankets, the exquisite lace and embroidery, the hand-tooled leather, tiny dolls which have been woven with fine thread about an ordinary pin, the elaborate wood carving, the hand-beaten silver, and pottery which was moulded on a primitive potter's wheel. It is true that many of these products find their way to the nation's greatest market from other sections of the

country, but one does not have to look far to find many of the articles being made in the little shops of the city.

FOODSTUFFS

An investigation of specific manufactures reveals some interesting

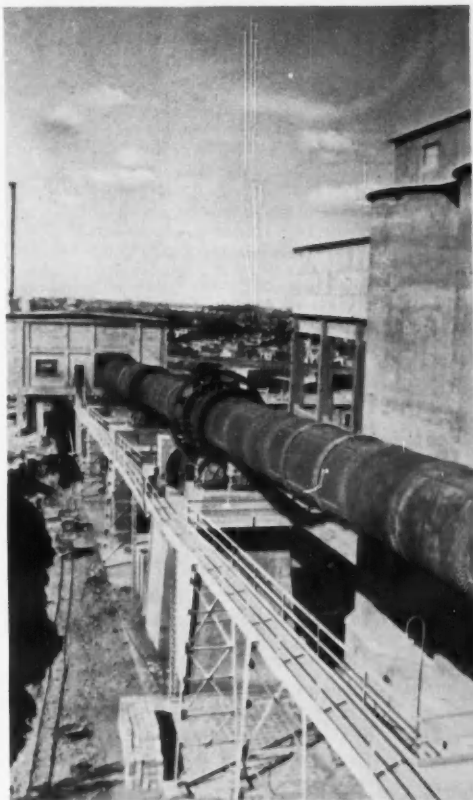


FIGURE 3.—The dry process kiln of La Tolteca, the second largest cement plant in the country and located in the Chapultepec-Tacubaya industrial zone.

facts regarding the District's industrial structure. On the basis of value of output, the manufacture of foodstuffs ranks first. The Census of 1930 indicates that nearly 55,000,000 pesos' worth of foodstuffs were manufactured or processed, including such main items as flour, Indian corn, beer, bread, coffee, and so forth.

TABLE III
OUTPUT OF PRINCIPAL GROUPS OF
MANUFACTURING INDUSTRIES
(Census of 1930)

<i>Industries</i>	<i>Federal District (Pesos *)</i>	<i>Total Mexico (Pesos *)</i>	<i>Per Cent in Federal District</i>
Foodstuffs	54,774,628	313,961,622	17.5
Products of Extractive Industries †	37,149,770	118,250,609	31.4
Textiles	31,391,457	193,711,189	16.4
Clothing	15,913,554	29,790,707	53.5
Chemical Products ‡	22,357,062	63,509,034	35.1
Wood and Forest Products	8,149,073	24,048,917	33.9
Leather, Rubber, and Paper	45,649,848	86,055,533	53.0
Machinery, Tools, etc.	11,607,725	32,105,725	36.2
Miscellaneous §	18,866,815	38,899,587	48.5
Total	245,859,932	900,322,923	27.3

* Note: 2.05 pesos (Mex.) = \$1.00 (U. S.)

† Products of extractive industries include the output of electric plants, iron foundries, cement plants, etc.

‡ Chemical products include soap, mineral oils and lubricants, chemicals, matches, explosives, pharmaceutical products, candles, etc.

§ Miscellaneous products include cigars and cigarettes, labels, placards, artistic handicraft work, musical instruments, etc.

Source: El Departamento de la Estadística Nacional.

TEXTILES

The textile industry is one of Mexico's oldest industries. Mr. A. F. Coleman, U. S. Assistant Trade Commissioner, says:

"Mexico long has been a producer of textiles of wool and cotton, as well as cloths made from other and less important fibers. The Aztecs knew the art of weaving, using a type of hand loom about the size of an embroidery frame, still to be seen in the more remote parts of the State of Oaxaca, but the industry received its first real impetus from the Spanish conquest.

"The natives were taught new weaves and new colors, and the manufacture of textiles became a major though household industry. The household industry still survives in the production of blankets and sarapes, but the production of cotton fabrics for wearing apparel has become the specialty of many modern cotton mills with the last word in machinery and turning out millions of yards of cloth annually."

The textile industry employs more labor and represents a greater capital investment than any other industry in the Federal District. With an output of over 31,000,000 pesos' worth of goods, the textile industry ranks second only to foodstuffs. The Census of 1930 also reveals that

95 per cent of the installed spindles were active at that time,—a sharp contrast with the many idle mills of Lancashire and New England.

The use of humidifiers represents an interesting adjustment to the climate of the District. More humidity must be artificially produced than in Lancashire; in fact, the

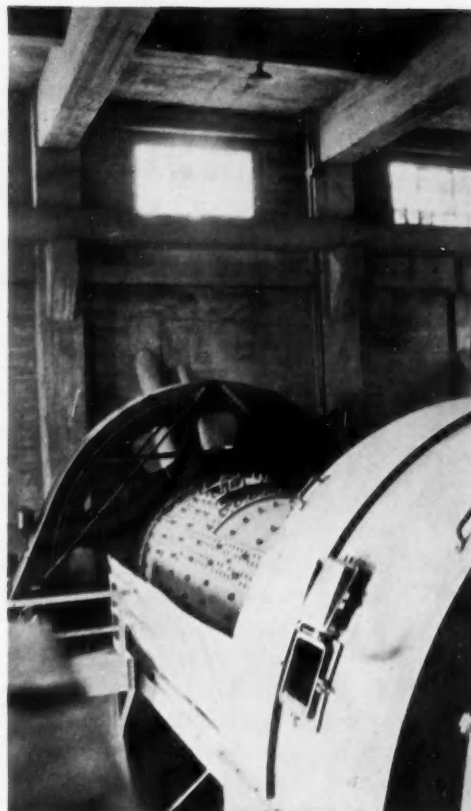


FIGURE 4.—Limestone for the manufacture of cement is quarried in the plateau, not far from La Tolteca. Compeb grinding mills are used for pulverizing the rock.

humidifiers are kept working day and night during the dry season. One who visits the larger cotton textile mills, such as La Hormiga and La Carolina, soon notices the modern machinery in use. Most of the textile machinery comes from Manchester, Bolton, and other English

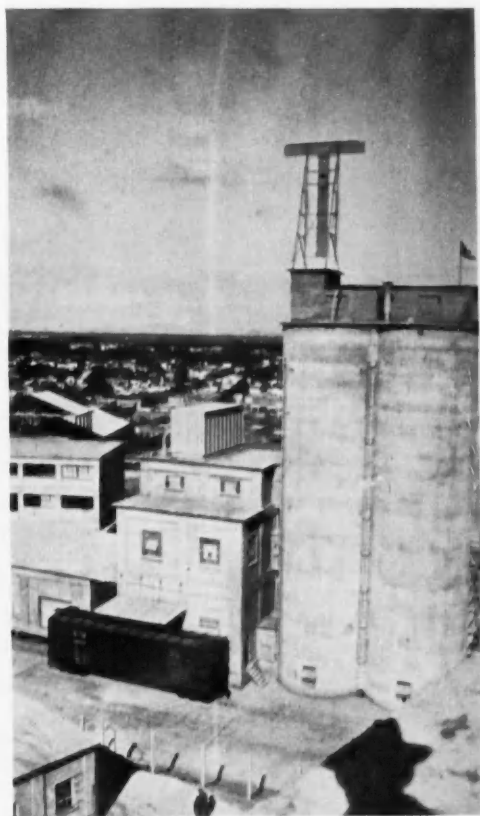


FIGURE 5.—The storage silos, packing plant, sack warehouses, and general offices of La Tolteca. Though much cement has been used in recent years in modern manufacturing establishments and road construction, the high cost of transportation hinders the expansion of the market, and cement imported from Amsterdam can reach Acapulco at a lower rate than can cement from Mexico City.

towns,—a region which in general can not afford to install the up-to-date machines which it produces and exports. The Mexicans have learned their trade from British mill men, and English or Scotch superintendents are not uncommon.

The production of cotton cloth within the District is about ten times as great as that of wool. The raw cotton and raw wool used by the textile mills are almost entirely of Mexican origin. Furthermore, the protective tariff makes the cost of importing yarns, except for the higher

counts and mercerized products, virtually prohibitive. Finally, it is interesting to note that the value of textiles produced in the Federal District exceeds that of either of the rival states of Puebla (the city of Puebla being the chief center) or Veracruz (Orizaba, the chief center), as the following census data indicate:

Federal District	31,391,457 pesos
State of Puebla	31,274,735 "
State of Veracruz	25,818,143 "

PRINTING

In the capital city of the Republic, with its publication of newspapers, books, and other matter, it is but natural that printing should be one of the important industries. Within the District is invested about 12,000,000 pesos in printing establishments, which produce an output worth over 21,000,000 pesos. For some time "El Universal," "El Excelsior," and other newspapers have been waging war through their editorials and feature articles with the San Rafael paper company, which supplies them with newsprint. Five or six years ago better and cheaper newsprint and paper could be purchased abroad, but to-day, with the assistance of a protective tariff, this company holds a complete monopoly in the production of newsprint. Consequently, the newspapers are complaining bitterly against the tariff and against the company and its business practices.

TOBACCO

The manufacture of tobacco ranks fourth among the District's leading industries with an output worth about 17,000,000 pesos. During the census year the tobacco factories, representing a capital investment of nearly 22,000,000 pesos, produced about 857 thousand cigars and nearly



FIGURE 6.—New assembly plant of the Ford Agency in the Federal District. The streets of Mexico City are as well paved and smooth as those of many cities in the United States and automobile traffic is almost as common. A new highway links Mexico City with the border.

six billion cigarettes. It is interesting to note that about one and a quarter billion cigarettes were produced in bulk for the poorer people, who can not afford to buy a package at a time.

The two leading tobacco manufacturers are El Aguila, which is controlled by the British-American Tobacco Company, and El Buen Tono, which is controlled by French capital. About 95 per cent of the raw tobacco used in these factories is produced in Mexico, American and Turkish tobacco being used for blending. Imported popular brands of American cigarettes sell at 80 centavos a package because of the protective duty. The principal brands of Mexican cigarettes, on the other hand, retail at 20 centavos, and most American smokers in Mexico agree that they taste fully as well as the American brands.

When one visits the factories of El Aguila and El Buen Tono, he finds the cigarettes being made, packaged, labeled, and wrapped in cellophane by machines which operate with great speed and efficiency. Belt line transmission of materials throughout the factories is in common use.

The Aguila plant, although only a few years old, was the first to put out an American sized package at reduced prices. Their labor policy is more advanced than that of the average American factory. Doctors, nurses, and health facilities are provided, and all laborers must take a bath at the factory at least twice a week. At present there are over 200 children and relatives of the employees in the day school and 100 in the night school maintained by the company. Employees are encouraged to buy first, cumulative, preferred stock, which pays dividends of 8 per cent. If the output exceeds last year's record, the stockholders receive an extra 5 per cent; if the year's output exceeds the average for the preceding three years, then an additional 3 per cent is added. The stock is bought on the installment plan, and at present 62 per cent of the employees are preferred stockholders. Furthermore, in this progressive plant the minimum wage is the highest in the Mexican tobacco industry, and the piece rate is built up on top of the minimum wage.

The "big four" industries,—food-stuffs, textiles, printing, and tobacco,

—which have just been discussed, employ over one-third of the District's factory labor and produce about one-half of the total manufactured output. Next in order of importance, each with an output worth less than 11,000,000 pesos, are the clothing, shoe, soap and candle, tanning and leather, iron and steel, and chemical industries.



FIGURE 7.—The foundry of La Consolidada, the largest iron and steel plant in the Federal District. This plant has been in operation for over 35 years and is still flourishing.

SOAP AND CANDLES

The soap and candle industry is especially interesting. For more than 30 years the manufacture of soap has been one of the country's leading industries. In its infancy the industry needed only country tallow

TABLE IV
CAPITAL INVESTED IN PRINCIPAL GROUPS OF
MANUFACTURING INDUSTRIES
(Census of 1930)

Industries	Federal District (Pesos *)	Total Mexico (Pesos *)	Per Cent in Federal District
Foodstuffs.....	26,258,842	239,175,808	11.0
Products of Extractive Industries.....	38,598,367	347,023,005	11.1
Textiles.....	32,141,275	194,543,983	16.5
Clothing.....	8,067,559	14,212,346	56.9
Chemical Products...	14,971,684	60,090,111	24.9
Wood and Forest Products.....	4,376,107	16,859,737	26.0
Leather, Rubber, and Paper.....	27,971,977	57,438,805	48.7
Machinery, Tools, etc.	5,437,935	11,790,907	46.1
Miscellaneous.....	24,499,666	38,394,781	64.0
Total.....	182,323,452	979,529,483	18.6

* Note: 2.05 pesos (Mex.) = \$1.00 (U. S.)

and cheap animal fats. To-day it demands millions of pounds of special oils, many of which are imported from distant lands. The growth of the soap industry has given birth to the local production of raw materials, so the country now boasts of a large supplementary industry which supplies many of the needs of its parent.

Soap factories use more coconut oil than any other oil. Much of this oil comes from the Philippines via San Francisco and Los Angeles, but a considerable amount is now produced in Mexico. Cottonseed oil is next in importance, and Mexico now produces three-fourths of her cottonseed oil requirements. Native tallow is kettle-rendered by country butchers and small meat packers; although, in general, it contains much acid and is of poor quality, it brings a rather high price delivered in Mexico City. Consequently, the District's soap manufacturers find it cheaper and more satisfactory to import much of their tallow from the American meat packers. Japanese and Norwegian fish-oil flakes are increasing as a substitute for tallow; these materials are higher in price, but they produce more soap in proportion to weight

and cost. Sesame oil is another oil which is being used in soap manufacture and which is also important as a cooking oil; it was brought to Mexico from the Orient many years ago and is now an oil-seed crop of great importance. Some olive oil is also used. The colors and perfumes are imported from Germany and France.

The chief demand for candles is for religious purposes. In front of almost every church or shrine one finds little stalls, tents, or shops where the tradesmen are selling candles. In the case of soap, by far the greatest demand is for laundry soap, a coarse, heavy product which falls within the price range of the great bulk of the population. Fancy and toilet soaps represent less than 10 per cent of the total production, and they are purchased chiefly by the foreign colonies and the well-to-do Mexican classes.

IRON AND STEEL

The iron and steel industry of the Federal District is also peculiarly interesting. Production conditions are quite different from those encountered in the average plant in Pittsburg, Birmingham, or Gary. When one visits La Consolidada, the largest plant, he finds no coal nor coke and no iron ore. The factory is equipped with open-hearth and electric furnaces, and petroleum and electricity serve as fuel. Out in the open yard are huge piles of scrap iron, undoubtedly the worn out products from foreign countries or from Monterrey. The District has no iron ore, and transportation charges would make its importation too costly. Scrap iron must be used; here indeed is a parasitic industry.

In spite of these handicaps, the District's iron and steel works flourish, La Consolidada having been in

business for 35 years. The Census of 1930 indicates that the value of all iron and steel products manufactured in the Federal District was over 9,000,000 pesos. This is less than half of the value of the output of the state of Nuevo Leon (the chief center being the city of Monterrey). No steel rails are made in the District, but La Consolidada manufactures a wide variety of products, in-



FIGURE 8.—Scrap iron is used as a substitute for iron ore at La Consolidada.

cluding steel castings, tool steel, railway springs, nails, bolts, nuts, rivets, and some commercial steel. It must be said that the electric furnaces yield high quality products, for electric steel has greater tensile strength than steel made by other processes.

ECONOMIC AND ENVIRONMENTAL FACTORS

The economic and environmental factors which have promoted or retarded the progress of manufacturing in the Federal District may be briefly analyzed as follows:

1. Nearness to market.
2. Nearness to raw materials.
3. Nearness to power.
4. Supply of labor.
5. Supply of capital.
6. Transportation facilities.
7. Climate.
8. Miscellaneous.

The importance of the Federal District as a market can scarcely be overemphasized. Within a relatively small area live 1,212,000 people, one-sixteenth of the country's population. In fact, the distribution of the nation's population has been likened to a spider,—the body of the "spider" being Mexico City, supported by long dangling legs which reach out to the smaller cities of the Republic. The body of this "spider" must be fed, clothed, and sheltered; hence it is that Mexico City is, and has always been, the nation's greatest market. As far back as 1772 the capital was a large city, having a population of 112,500 inhabitants. To-day, with a population of 959,500 people, it is indeed the economic, cultural, and geographical center of the country.

To this large urban market are brought the raw materials needed for manufacture. On the basis of value, nearly one-third of all the raw materials used in Mexican manufacturing are consumed in the Federal District. As nearly all Mexican manufactures are destined for the domestic market, likewise, most of the raw materials are of Mexican origin. Many of the materials used in the Federal District are produced near at hand; others, such as raw cotton and leaf tobacco, can stand the transportation charges from the more distant parts of the Republic. It must be noted, however, that iron and coal, which are the foundation stones of the great industrial centers in Europe

and the United States, are not to be found within commercial distance of the Federal District. Consequently, manufacturing within the District is of a lighter type.

Since coal is lacking, petroleum and hydro-electric power provide the fuel and power needed for manufacturing. The petroleum is pumped by pipe line from the Tampico oil fields, and the electricity is produced in the nearby mountains. The *Compañía Mexicana de Luz y Fuerza Motriz* operates 13 different power plants, the most important plant utilizing the waters of the Necaxa River in the Sierra de Puebla. This company produces heat, light, and power for the city of Mexico and for 30 towns



FIGURE 9.—Electric furnaces at La Consolidada yield high quality steel, having greater tensile strength than that made by other processes.

and villages throughout the Federal District.

There is a plentiful supply of labor in the Federal District, and it can be said that Mexican laborers make good workmen, when trained in the skilled and semi-skilled tasks of industry. Labor has played a dominant part in the politics of the country, and the Labor Law of 1931 rigidly protects the rights of the workers. For example, an 8 hour day has been established for day work and 7 hours for night work; workmen between the ages of twelve and eighteen enjoy a 6 hour day.

TABLE V
NUMBER OF WORKERS AND NUMBER OF FACTORIES IN EACH
OF THE PRINCIPAL GROUPS OF MANUFACTURING IN-
DUSTRIES IN THE FEDERAL DISTRICT
(Census of 1930)

<i>Industries</i>	<i>Number of Workers</i>	<i>Number of Factories</i>
Foodstuffs	9,010	751
Products of Extractive Industries ..	7,159	437
Textiles	12,221	175
Clothing	5,801	550
Chemical Products	4,275	178
Wood and Forest Products	3,348	436
Leather, Rubber, and Paper	11,035	557
Machinery, Tools, etc.	5,674	350
Miscellaneous	2,478	42
Total	61,001	3,476

Wages must be paid in legal money, so the Mexican worker is better off in this respect than many West Virginia miners, who are paid in company scrip, and most southern negroes on the cotton plantations, who receive goods or credit for their labor. No laborer who has been with his employer for a year can be discharged without being paid three months' wages. Under Article 99 of the law provision is made for the establishment of a minimum wage. The article considers the worker as the head of a family and states that the worker should receive enough to cover ordinary expenses of living and the costs of education, health, and a certain amount of recreation.



FIGURE 10.—Though no steel rails are made in the district, steel castings, tool steel, and the smaller high quality steel products are produced to supply most of the local demand.

Furthermore, debts contracted by workmen with the employer can not be collected in toto. Such debts can be demanded only in installments; each installment should not be more than 30 per cent of the excess paid the worker above the minimum wage in his industry. If the workman perchance does not earn the minimum wage, he can pay such debts when he desires.

If a factory employs more than 400 or less than 2000 workmen, the company must pay the expenses of one man to be educated in a technical school; if it employs more than 2000 men, the company must pay the expenses of educating three men. In hiring men the employer is supposed to give preference to syndicate, or labor union, members, and no factory or business enterprise can employ more than 10 per cent of foreigners. Collective bargaining is very common, and employers resent the power of labor. The capitalist-employers



FIGURE 11.—Many food products, especially beans and corn, grown on the small fields of fertile volcanic and alluvial soil in the surrounding countryside, are brought into Mexico City on mule back, often by large pack train outfits, to be disposed of through small corner stores to the manufacturing population.

claim that the labor situation has retarded industrial progress.

With regard to capital, it can be said that foreign capital has played a vital part in the development of industry in the Federal District as it has throughout the Republic. Mexico may be classed as a "mature borrower." Her payments of interest to foreign creditors each year exceed the new principal borrowed. Consequently, in order to make interest payments and repayments of borrowed capital, Mexico's exports of merchandise must exceed her imports. It is probably impossible to calculate the exact amount of foreign funds invested in the various branches of manufacturing, but it is generally known that foreign capital predom-

inates in the textile, hydro-electric, flour milling, underwear, chemical, tobacco, and paper industries. The research division of the American Chamber of Commerce estimates that 40 per cent of all capital invested in manufacturing is Mexican. Local capital is by no means unimportant, and its influence will continue to grow as time goes by.

TABLE VI

VALUE OF OUTPUT, CAPITAL INVESTED, AND NUMBER OF WORKERS IN THE MANUFACTURING INDUSTRIES OF THE REPUBLIC OF MEXICO, THE FEDERAL DISTRICT, AND THE STATES OF VERACRUZ, NUEVO LEON, AND PUEBLA (Census of 1930)

Political Division	Value of Output (Pesos *)	Capital Invested (Pesos *)	Number of Workers
Republic of Mexico..	900,322,923	979,529,483	318,763
Federal District.....	245,859,932	182,323,452	61,001
Veracruz.....	101,306,364	122,251,717	35,317
Nuevo Leon.....	68,744,280	53,733,578	16,159
Puebla.....	61,641,948	156,444,982	25,925

* Note: 2.05 pesos (Mex.) = \$1.00 (U. S.)

Adequate transportation facilities link the Federal District with other states and with foreign countries. The railroads, of course, are the primary arteries of commerce. Mexico City, like Paris, is the hub of the railway pattern. The transportation arteries are present, but the life-giving blood stream of traffic is sluggish. Bulky commodities of low value do not move cheaply and easily. For example, it is a well known fact that the freight rate on a ton of cement shipped from Amsterdam across the Atlantic, through the Panama Canal, and up the Pacific to Acapulco on Mexico's west coast is less than the freight rate on a ton of cement shipped from Mexico City to the same destination.

The geography of Mexico helps to explain the railway rate situation. There are large areas, where it is too arid or else too hot and humid, which have scanty populations; such regions produce little railway traffic.

On long-haul traffic, rates are naturally high. Then too, high construction and operating costs, reflecting the rugged topography of the more densely populated part of the country, contribute to high rates. It seems clear that the manufactures of the Federal District, excepting those commodities of high value which can stand high rates, will be restricted for some time to relatively nearby markets.

In the matter of climate the Federal District is particularly fortunate. Since it is located at an altitude of about 7500 feet, although in the torrid zone, an invigorating temperate climate prevails. The range in temperature from summer to winter is less than the change from day to night. Consequently, the winters are very mild, and the extreme summer heat of the American Corn Belt and Cotton Belt is unknown in the Federal District. Even in July and August one frequently wears a topcoat in the evening for comfort. During the rainy season, from May to September, it rains nearly every day in the afternoon or evening, but never do people suffer from the humidity. Factories do not have to shut down from time to time because of oppressive heat, as they do occasionally in some parts of the United States; neither do factories in the Federal District spend any money for heating their plants in winter.

Among the miscellaneous factors which have affected manufacturing in Mexico may be mentioned the protective tariff. Although a protective tariff can not be economically or socially justified, as it almost always places the cost of protection on the backs of the consumers, there is no doubt that the Mexican tariff has done much to artificially stimulate

manufacturing within the Federal District and throughout the country. Furthermore, many foreign firms have found it profitable to establish factories and to manufacture their products in the District.

Another factor is the rate of foreign exchange. During 1932, since Mexico abandoned the gold standard, the American dollar was worth from three to four pesos, par being about one dollar to two pesos. As people receive their salaries and wages in pesos, this situation has tended to curtail the purchase of American



FIGURE 12.—The fruit peddler is common on the streets of Mexico City and mangoes and bananas, besides many other tropical fruits, are sold from door to door.

goods and to stimulate home production.

Finally, the advertising carried on by local producers, utilizing such slogans as "For National Prosperity," "A National Product," and "Have Faith in Mexico and Her Products," may be mentioned. Such national-

istic advertising has undoubtedly stimulated the consumption of local products.

CONCLUSION

It is true that much of picturesque Mexico is still the "land of mañana," but the Federal District with its rare combination of ancient handicraft and twentieth century industrialism is clearly living in the "land of to-day." Fortunately, the smoky pall of American and British indus-

trial centers is missing, and the high pressure propulsion so typical of New York and Chicago has not gripped the Mexican people. With a continuance of stable government, with extension of public education, and with the further improvement of transportation,—industry and commerce will grow. And the Federal District, located in the heart of Mexico, will undoubtedly continue to be the nation's economic and industrial capital.

DEVELOPMENT OF REINDEER ACTIVITIES IN ALASKA

Albert L. Seeman

FORTY years ago Santa Claus had sixteen Alaskan reindeer from which he could choose his team of eight. At Christmas 1932 he could select his team from herds whose numbers approximated one million reindeer. That the United States Government considers the prodigious growth of this comparatively new enterprise of significance was evidenced by the presence in Nome during the summer of 1932

ment primarily to relieve the desperate economic situation of the Eskimos.

For generations the Eskimo has eked out a bare existence by hunting, trapping, and fishing along the coastal strip of Alaska. For his economic welfare the Eskimo depended entirely upon the animals that he was able to kill. His food, shelter, vehicles of transportation, fuel, tools, and luxuries have come from the hunt. In this way he provided himself with the bare essentials of existence and made himself solely dependent upon one resource. The margin of safety between subsistence and privation was therefore a very narrow one and could readily be destroyed. This destruction might result from natural or artificial forces.

Artificially, this margin was reduced by the ingenuity of the white man's inventions. Motor driven boats and high powered rifles brought the sea life which was inaccessible to the natives to the white man's markets. On the land the caribou was being frightened from the coastal areas into the interior which was out of the native's reach.

These artificial factors merely supplemented the natural factors in reducing the margin. Natural forces such as storms, prolonged winters, and disease frequently prevented the Eskimo from securing the necessary subsistence. The crudity of his boats and sleds hampered him in following the animals to new and farther feeding grounds.

With the increasing scarcity of game the Eskimo found himself de-



FIGURE 1.—Since the environmental factors were similar on both sides of Bering Sea, there seemed no reason why the reindeer should not thrive as well on the Alaskan coast as on the Siberian coast. The spread of the reindeer herd in Alaska has proved this to be true.

of seventeen officials engaged solely in the reindeer industry. This group of seventeen men did not include any one who represented private investments.

THE AMERICAN ESKIMO

The reindeer was introduced into Alaska by the United States Govern-

prived of his usual medium of trade. He had been accustomed to bartering with the Siberians for reindeer skins to supplement his material for clothing.

These factors, natural and artificial, together with an increasing population, frequently brought the natives face to face with privation or starvation. While the Eskimo might have met and overcome any one of these obstacles, the aggregate presented a problem beyond the range of his capabilities.

Nature, having been so largely responsible for creating this destitution, might eventually have evolved an adjustment through the working of the laws of self-preservation and natural selection. However, that process would have resulted in a tremendous loss of life. Instead, the Federal Government by a positive program of relief supplied an artificial solution.

DEPARTMENT OF INTERIOR RELIEF PROGRAM

The Department of Interior having already assumed the responsibility of caring for the American Indian, accepted, consequently, the guardianship of the Eskimos. The American settler had forcibly removed the Indian from his home, his soil, his associations, and his source of food. When finally he faced extinction at the hands of American colonization he was made a ward of the government. The situation of the Eskimo differed in that his difficulty was created not so much by the activities of the white man as by the environment in which he lived.

Dr. Sheldon Jackson, an official in the Department of Interior, directed the attention of the government to the necessity of adopting one



FIGURE 2.—The reindeer area is in western Alaska, with Teller (formerly Port Clarence) as a nucleus, to which 1280 animals were brought from Siberia between 1892 and 1902.

of three policies toward the needs of the Eskimo. The government might (1) permit the natives to starve, (2) give them the indispensable food from time to time, or (3) provide them some means of supplying their own food. The first course was incompatible with government precedent; the second was expensive and afforded but temporary relief. After making a survey of the Bering Sea coast, Dr. Jackson determined a means of making the Eskimo economically independent. On the Siberian coast he found the natives more prosperous and better fed than on the Alaskan side of the Bering Sea. Since the Siberians were herders of reindeer and no such activity was to be found in Alaska, Dr. Jackson argued that this economic pursuit must be responsible for the difference in the welfare of

these two groups. The reindeer herds widened the margin between privation and economic stability for the Siberians. The environmental factors such as vegetation and climate were similar on both coasts so that the raising of reindeer would not be impossible on the Alaskan side (Figure 1).

In order to better the economic conditions of the Eskimos Dr. Jackson proposed to introduce reindeer into Alaska. Therefore, in his annual report to Congress in 1891 he

Eskimos' economic problem Dr. Jackson laid the foundation for the reindeer industry of to-day. While Dr. Sheldon Jackson was responsible for the formulation and execution of plans in this project, he had at all times the full coöperation of Dr. William T. Harris, head of the Bureau of Education. The actual transportation of reindeer from Siberia to Alaska was supervised by Captain M. A. Healy of the Revenue Cutter Service.

The importation of Siberian rein-



FIGURE 3.—The tundra vegetation and the water-filled depressions are characteristic of the entire grazing area in summer.

requested sufficient funds to initiate this program. Congress, however, failed to appropriate the money. In order not to delay the relief program until a Congressional appropriation might be secured, a popular appeal was issued through the newspapers. This brought \$2,146—an amount sufficient for the importation of sixteen head of reindeer from Siberia in 1892. These sixteen reindeer formed the nucleus of the present Alaskan herds.

In 1894 Congress passed its first bill appropriating money for the importation and distribution of reindeer. Thus in an effort to solve the

deer was begun in 1892 and continued until 1902, during which time 1,280 animals were landed at Teller, Alaska (Figure 2). While the Russian Government sanctioned the plan, the Siberian deer men were not willing to sell their animals to the United States Government. These herders were a superstitious and non-progressive group. They believed that the disposal of their deer would attract some evil influence that would frustrate all their economic activities. The group retained unaltered the customs, habits, and points of view of their ancestors. Since their forefathers had not set the precedent of



FIGURE 4.—The fence along which reindeer are driven to reach the corral. Sometimes the fence extends for ten miles or more into the tundra. (Courtesy of U. S. Bureau of Biological Survey.)

selling reindeer to the white man, they arbitrarily refused to dispose of their animals. This stubborn adherence to the customs of the atavi had to be overcome before any reindeer could be purchased.

THE REINDEER

The reindeer (*Cervus tarandus*) are circumpolar in their distribution and are well adapted to the boreal tundra. They are exceedingly gregarious and homing in their habits, and migrate in herds rather than individually or in pairs (Figure 13). They are able to withstand severe cold and heavy snows for long periods of time. During the winter months the animals feed exclusively on moss; frequently there is snow which must be removed by the reindeer before feeding. The reindeer moss (*Gladonia rangiferinas*) is grayish white when dried, but has a greenish hue when moist; it takes its nourishment chiefly from the air, avidly absorbing the humidity which makes it swell and become elastic; in a dry condition it is very brittle. It contains starch and a gelatinous substance which make it nourishing to the reindeer. It grows very slowly. Normally it requires about

twenty years to restore the growth of the plants after the reindeer graze, though only the top and finer parts of the plant are eaten. It will hardly grow again if cropped down to the roots. The summer feed includes grass, willow leaves, and other foliage (Figures 3 and 4).

The reindeer have made bodily adaptations which fit them to the tundra environment. Their air-filled, cellular skins make them buoyant swimmers and serve to keep them warm even in the severest weather. Their hoofs are wide and flexible, enabling them to travel over heavy snow and wet tundra without miring down. The reindeer can travel in snow so deep that other animals are unable to get through.

The fawns are vigorous from the moment of birth and may be dropped in deep wet snow without any apparent damage to them; very few die. The does are prolific and after they reach the age of two bear an average of one fawn annually for a period of ten years.

From the reindeer the natives secure a wide variety of provisions. The flesh and milk furnish food, and the marrow, hams, and tongue are considered delicacies. Usually the

entrails are fed to the dogs though they sometimes are utilized for sausage casings. The hides are made into clothing, bedding, tent covers, harness, ropes, and fish lines. The hides of the forelegs—since they are much tougher than other portions of the hide and are impervious to water—are segregated and used exclusively for the foot and leg coverings of the natives. The tough sinews make a thread suitable for boat building and stitching hides and skins. The bones and sometimes the horns are fashioned into various kinds of household

Eskimo trained in the care of domestic animals.

The first instructors in reindeer culture were the Siberian herdsmen; they were employed because of their proximity to Alaska. These Siberians proved too inefficient and Lapp herders were persuaded to come from Europe. At first these Laplanders were very reluctant and none could be induced to make this venture. Finally, assured of safe passage and eventual return to their homeland at the expiration of their term of service, sixty-three Lapps were prevailed



FIGURE 5.—The reindeer herd following the fence to the corral in the summer round-up. (Courtesy of U. S. Bureau of Biological Survey.)

implements and occasionally into sleds. The animal may be used for dragging sleds and packing burdens but the tendency at the present time is again to use dogs for this purpose.

THE ESKIMO AS REINDEER HERDER

Fundamentally the Eskimo was a hunter of beasts. His concern had been with the trapping and killing of his meat. He thought of this strange new animal in the same light: a beast for him to kill. The reindeer was to him additional prey and not a responsibility which required his care and protection. In order to establish the reindeer on a pastoral basis the attitude of the natives toward them had to be changed and the

upon to come to Alaska. These Lapps instructed the Eskimos in the handling, care, and herding of reindeer. The Eskimos were apprenticed to these instructors for a period of five years, during which time the apprentices were to receive instruction, food, and clothing and a certain number of female reindeer and their offspring. At the end of the five years each Eskimo owned thirty-seven females and their fawns, making a probable total of fifty animals.

CONGRESSIONAL APPROPRIATIONS

Congress made possible this instruction and the purchase of additional reindeer by appropriating varying sums of money. The annual

appropriations for this purpose are shown in Table I.

TABLE I
CONGRESSIONAL APPROPRIATIONS TO THE
REINDEER SERVICE

Early Period		Recent Years	
Year	Amount	Year	Amount
1894.....	\$6,000	1924.....	\$10,000
1895.....	7,500	1925.....	15,640
1896.....	7,500	1926.....	12,500
1897.....	12,000	1927.....	12,500
1898.....	12,500	1928.....	17,520
1899.....	12,500	1929.....	19,500
1900.....	25,000	1930.....	19,800
1901.....	25,000	1931.....	22,000
1902.....	25,000	1932.....	34,300
1903.....	25,000		
1904.....	25,000		
1905.....	25,000		
1906.....	15,000		

These appropriations by the Federal Government enabled the purchase of 1,280 reindeer. The annual purchases are shown in Table II.

TABLE II
ANNUAL PURCHASES OF REINDEER BY FEDERAL GOVERNMENT

Year	Number	Year	Number
1892.....	171	1898.....	161
1893.....	124	1899.....	322
1894.....	120	1900.....	29
1895.....	123	1901.....	200
1896.....	0	1902.....	30
1897.....	0	Total.....	1,280

CHANGING STATUS OF REINDEER ECONOMICS

The original concept of widening the margin between privation and

sustenance can no longer be applied to the Eskimo. The increased number of reindeer has eliminated the need of such a program. Today enough Eskimos have an interest in reindeer to provide the entire group with sufficient food. The rapid and considerable increase in the number of reindeer has developed another prominent industry that affects the United States as well as Alaska.

The Federal Government found it necessary to establish a Bureau in the Department of Interior to supervise and direct the reindeer activities for the Eskimo and the whole of Alaska. The Superintendent of Reindeer has as his assistants seven unit managers and various teachers from the Department of Interior who supervise the local work. These teachers have proved unsatisfactory as reindeer workers since their teaching has not prepared them for this work and it leaves them little time for such supervision. The House Appropriations Bill for the year 1932 specified that all men in the Reindeer Service must be trained in animal husbandry.

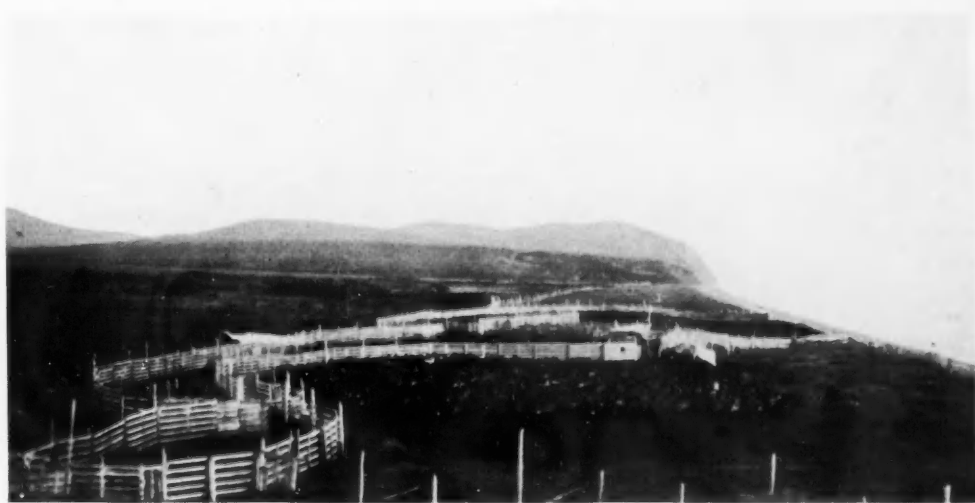


FIGURE 6.—A herd of reindeer gathered in the corral ready for earmarking. The fence used in driving the reindeer to the corral can be seen extending far into the background. The earmarking chute is in the right center. (Courtesy of Lomen Brothers.)

This requirement for a specific training may bring into the field men who have an understanding and appreciation of the problems of the reindeer service.



FIGURE 7.—The corrals resemble a succession of pens in a large stockyard.

SURVEYS OF DIVISIONS OF BIOLOGICAL INVESTIGATIONS

The Division of Biological Investigations, Department of Agriculture, under the direction of Mr. L. J. Palmer, has made some excellent surveys in the reindeer field. They

have made a reconnaissance survey of the grazing areas of Alaska for the purpose of determining the potential range of a permanent animal population. In addition, they have conducted an extensive and intensive investigation into the crossbreeding of reindeer with the wild caribou, to produce a larger animal with choicer meat; the handling and care of animals, and many similar problems have been included. These surveys have resulted in several publications and the compilation and dissemination of a considerable amount of valuable information.

For supervision purposes, Mr. B. B. Mozee, the General Reindeer Superintendent, has divided Alaska into units such as are shown in Table III. The organization of the Alaska Reindeer Service and its officials are presented in the same table.

WHITE MAN'S INVESTMENTS

After reindeer became established as fauna permanent to Alaska the white man perceived an opportunity for developing a pastoral industry for his own benefit. He accordingly established herds from time to time. Many of them have passed out of existence or have been absorbed

TABLE III
ALASKA REINDEER SERVICE ORGANIZATION

ALASKA REINDEER SERVICE ORGANIZATION

I. Secretary of Interior			
II. Reindeer Council			
Chairman—Governor of Alaska			Advisory
Chief of Alaska Division (Dept. Interior)			
General Reindeer Superintendent—B. B. Mozee			
A. J. Lomen			
Representative of Native Interests			
III. Districts:			
<i>Districts</i>	<i>Area in Sq. Miles</i>	<i>Total Number of Herds</i>	<i>Herds Owned by White Owners</i>
A. Northwestern	120,000	17	
B. Western	40,000	8	3
C. Teller	8,000	6	1
D. Buckland	1,700	6	2
E. Nome	5,600	4	1
F. Golovin	5,000	3	1
G. Egavik	5,000	3	1
H. Lower Yukon	28,000	8	2
I. Kuskokwin	125,000	17	4
J. Alaska Peninsula	50,000	14	1



FIGURE 8.—The slaughter chute where the animals are pithed, bled, gutted, and skinned. At the far end of the chute is the gate which closes behind the animal being slaughtered.

by other holdings, leaving the Lomen Reindeer Corporation of Nome the largest and oldest organization. Table III shows the present distribution of the herds of the white owners.

The corporation of Lomen Company established their herds in 1914 with the purchase of reindeer from Alfred S. Nilima, a Lapp. These deer had been acquired by Mr. Nilima from the Federal Government as his remuneration for his services as a herder and trainer. The herd was located near Kewalik and formed the nucleus of the present vast holdings of this pioneer corporation approximated at 400,000 reindeer.

The Lomen Company began the exportation of meat to the United States in 1922 and in so doing they altered the status of the reindeer so that its future development was affected. No longer is its function

limited to providing subsistence for the natives. The pastoral activity has developed into an industry of salient importance. Since they were pioneering, the Lomen Company found it necessary to provide their own refrigeration ships and facilities for slaughtering and storing their meat.

The total amount of meat shipped from Alaska in the various years is shown by Table IV.

TABLE IV
REINDEER MEAT SHIPPED FROM ALASKA

Year	Amount (in pounds)
1926.....	968,000
1927.....	820,000
1928.....	1,319,000
1929.....	1,384,000
1930.....	1,567,000
1931.....	50,000
1932.....	200,000

PRESENT DAY METHODS OF HANDLING

The reindeer roam the hills of the northern tundra much as did the

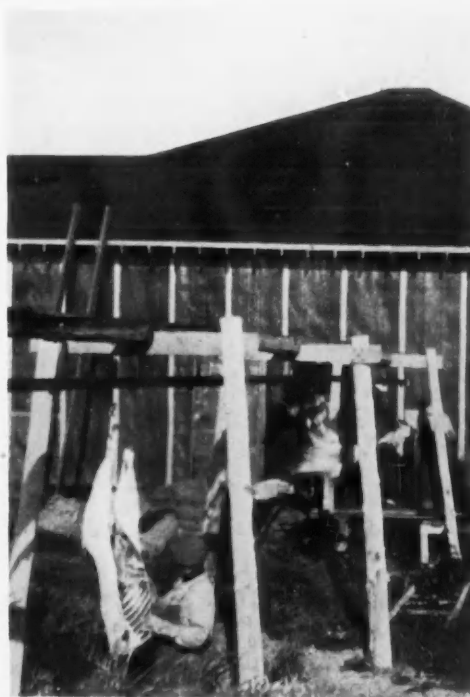


FIGURE 9.—Carcasses are thoroughly cleaned before entering the cold storage plant. White butchers supervise the Eskimos in this work. (Courtesy of Lomen Brothers.)



FIGURE 10.—The skins are dried, rolled, and packed, ready for shipment. (Courtesy of U. S. Bureau of Biological Survey.)

cattle on the western plains of the United States some seven decades ago. These reindeer are rounded up each year and marked for identification. The present practice of ear-marking, viz., of cutting various designs in the ears, was adopted after it was found that the branding iron was too severe for these thinner skinned animals. The ear-marks are registered with the government.

The round-up is held shortly after fawning season, from early July to mid-August, as the fawns remain with their mothers until a few months old and ownership may be easily established at that time (Figure 12). There are always a few reindeer

which have escaped previous round-ups and remain unmarked—the mavericks. When mavericks appear in the round-up they are divided proportionately among the owners of that range area. A recognized practice among all reindeer owners is to mark fawns from stray does with the markings of the range in which they are found. Since the fawns from stray does are never equal in number among the different ranges, some reckoning must be made at the close of the marking season. A government official keeps an itemized check of all reindeer at each round-up. It then becomes a book-keeping process to determine the



FIGURE 11.—The reindeer are earmarked rather than branded because their tender skins cannot stand the branding iron. The animal being earmarked is in the foreground and the next one is being held in the chute. The annual round-up requires the services of many Eskimos.



FIGURE 12.—At the time of earmarking the fawns are three to four months old. The older animals are usually shedding their long winter hair at that time and present a disheveled appearance.

balances of these various ranges and pay for the excess fawns. It is necessary to mark fawns which have strayed from adjoining ranges in this fashion because it would be impossible with present range methods to keep the fawns on the home range of

the parent doe. This is due to the fact that reindeer have the pronounced tendency of returning to the range on which they were born.

In the slaughter pen stray animals in the herd create a similar problem. The segregation of the strays has been found to be impractical, so a system has been evolved of balancing the differences in the various killing lots. Custom requires that the ears of all slaughtered animals be kept for checking purposes.

PRESENT DAY PROBLEMS

In the past forty years of reindeer supervision, the government has not effectually concerned itself with the possibility of creating an industry nor with the marketing of reindeer meat outside of Alaska. Such markets as exist for the reindeer meat have been built up by white owners at their own expense and without the coöperation of the government. The Eskimos cannot hope for a per-



FIGURE 13.—Reindeer on the winter range have a heavy thick winter coat, sleek in appearance compared to that of the early summer. (Courtesy of Lomen Brothers.)

manent nor substantial relief until a positive program of industrial development is effected and until the market for the meat is extended and firmly stabilized. The government, of course, is interested in reindeer as an avenue of service to Alaska rather than as a source of revenue to itself. However, if it should undertake its reindeer activities from the standpoint that profits *might* result, it could be, in this instance, of greater service to the Eskimo. While the Eskimos will always have reindeer as a supply of food, they cannot effect an industry on the basis of their own initiative, nor in face of the present governmental policy. The herds have increased to such numbers that it is now advisable and possible

to develop reindeer activities on an industrial basis rather than on the original concept of a means to provide subsistence alone.

The present general economic stagnation has had its paralyzing effect on the reindeer industry and consequently is reflected in the welfare of the natives. The white man's market has been curtailed, therefore the native finds no sale for his reindeer and often no employment for himself. This state of affairs is being paralleled in almost every activity and the eventual readjustment of general economic conditions will undoubtedly be reflected in a stabilization and advancement of the reindeer industry and the ensuing welfare of the natives.

THE PHILIPPINE QUESTION

Warren Dupre Smith

THE puzzling Philippine question has been approached from a number of angles and many books and articles have been written on the subject. In most cases, however, the political aspects of the question have been emphasized. Many discussions also have been contributed by persons with a more journalistic and human interest point of view. It seems at this time essential that a more objective and scientific survey of the situation be made which shall be as free as possible from economic interests and racial prejudices. The writer therefore will attempt to discuss in this article some of the outstanding geographic factors which, if not actually determining, may very profoundly influence the future of this archipelago. While the point of view is primarily that of the geographer, the data supplied by the geologist will be given due attention, as is only proper if one wishes to get down to fundamentals in appraising a situation of this kind. Of course there are many other important aspects of the question, but these will have to be excluded from a treatment of this kind at this time.

Three points of view may be taken in considering this question: the Filipino point of view; the American business man's point of view; and finally, the large, world point of view, the geographer's. The first view certainly is entitled to have a sympathetic and complete hearing. That view has been ably presented by many people. The second one, also,

is not without its merits and shortcomings. The equity of the American business man must not be neglected, in this situation, whether or not his point of view is accepted. The third may be shown to be the best in the long run for everybody concerned, because it is based upon more substantial grounds, namely, the facts of the physical and cultural background.

In the first place the geographical position of this archipelago is the outstanding factor in the whole situation which makes the world point of view command attention.

The importance of the Philippines as an entrepôt to Asia is scarcely realized by the American who has not come into direct contact with the Far East scene. As a distributing center, Manila can reach over 800 million people.

As a source of tropical raw materials the archipelago is a veritable storehouse of great potentialities.

In the world of scientific matters the Philippines occupy an important place, first as a field for scientific research in medicine, geology, biology, and ethnology, offering perhaps unparalleled opportunities compared with almost any other equal area in the world; and second, for its well-known institution for tropical research, the Bureau of Science. One phase of this bureau's work is alluded to especially in the report of the Governor-General for 1929:

"To show what science has done to the people we may simply point to

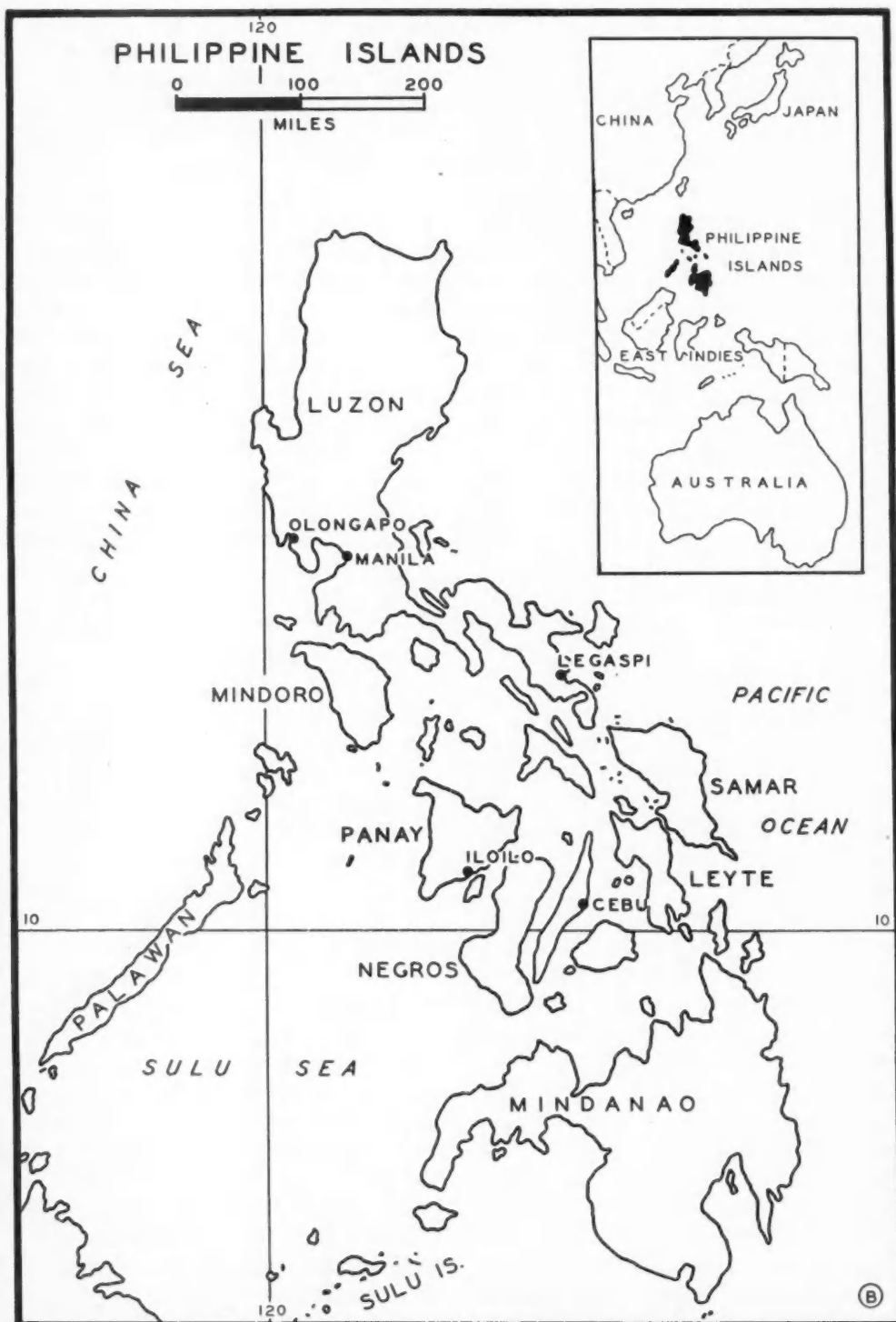


FIGURE 1.—The Philippine Islands lie athwart the great western gateway to the Pacific, the Singapore gate, in a buffer position between Japan and Australia, and as an entrepôt to the vast markets of the Far East.

the fact that *there was no prevalence of epidemic diseases in the islands in 1929*. This is, in a great measure, due to the fact that the health of the public is protected against epidemic diseases by vaccines manufactured by our bureau of science. Eight million three hundred thousand doses of these vaccines were dispensed in 1929. Among the most important of these were vaccines against smallpox, cholera, typhoid, and dysentery."

The italics have been added to bring out this very significant statement which can be appreciated only by those who knew the archipelago prior to 1898.

Whatever the approach to this problem, one thing becomes increasingly clear, that the crux of the whole matter is the economic status; and that can never be made entirely

satisfactory until the political stability of the archipelago can be reasonably assured.

It is almost axiomatic, in order to solve any problem, that it must first be understood. This insight cannot be gained by junketing congressmen in a month or two of visit to the archipelago, nor by journalists who get their material second-hand around club bars.

FACTORS IN LOCATION

Some facts that appear to be especially pertinent are: First, the very position of the archipelago, lying as it does athwart the great western gateway, the Singapore gate, to the Pacific, places it in a strategic position.

Second, its buffer position between Japan and "White Australia" is a

TABLE I

VALUE OF IMPORTS OF THE ISLANDS, AND VALUE OF IMPORTS FROM THE UNITED STATES*

Article	Value	From the United States
Cotton and its manufactures	\$53,953,812	\$31,697,057
Iron and steel and manufactures	43,812,331	35,559,922
Mineral oils	19,838,058	16,814,381
Automobiles, parts, and tires	15,271,455	15,091,886
Meat and dairy products	13,787,193	7,341,123
Rice	11,620,026	None
Wheat flour	10,120,155	8,696,878
Silk and its manufactures	9,328,442	4,067,759
Paper and its manufactures	8,454,247	6,093,373
Electric machinery	7,460,050	6,279,801

* From Annual Report of Governor-General, 1929.

TABLE II

EXPORTS OF PRINCIPAL PHILIPPINE COMMODITIES *

Commodity	Quantity 1929	Value (thousands of dollars) 1929
Coconuts, desiccated (1,000 lbs.)	49,131	3,540
Sugar (1,000,000 lbs.)	1,534	53,245
Copra meal and cake (1,000 lbs.)	250,867	3,793
Tobacco and manufactures		8,790
Leaf (1,000 lbs.)	60,801	4,392
Cigars (thousands)	188,333	3,825
Textile fibers, vegetable (tons)	209,141	31,340
Abaca (manila hemp) (tons)	186,433	28,421
Maguey (tons)	15,785	1,630
Manufactures of vegetable fibers		9,261
Cordage (1,000 lbs.)	15,667	1,904
Embroideries		5,765
Hats, all sorts, number	950,741	2,049
Buntal hats, number	871,844	2,016
Lumber and timber (1,000 bd. ft.)	104,697	3,619
Copra (1,000 lbs.)	382,658	15,566
Coconut oil (1,000 lbs.)	420,019	29,185
Gold ore, bullion, and coin		3,500
All other		3,029

* From U. S. Commerce Yearbook, 1930.

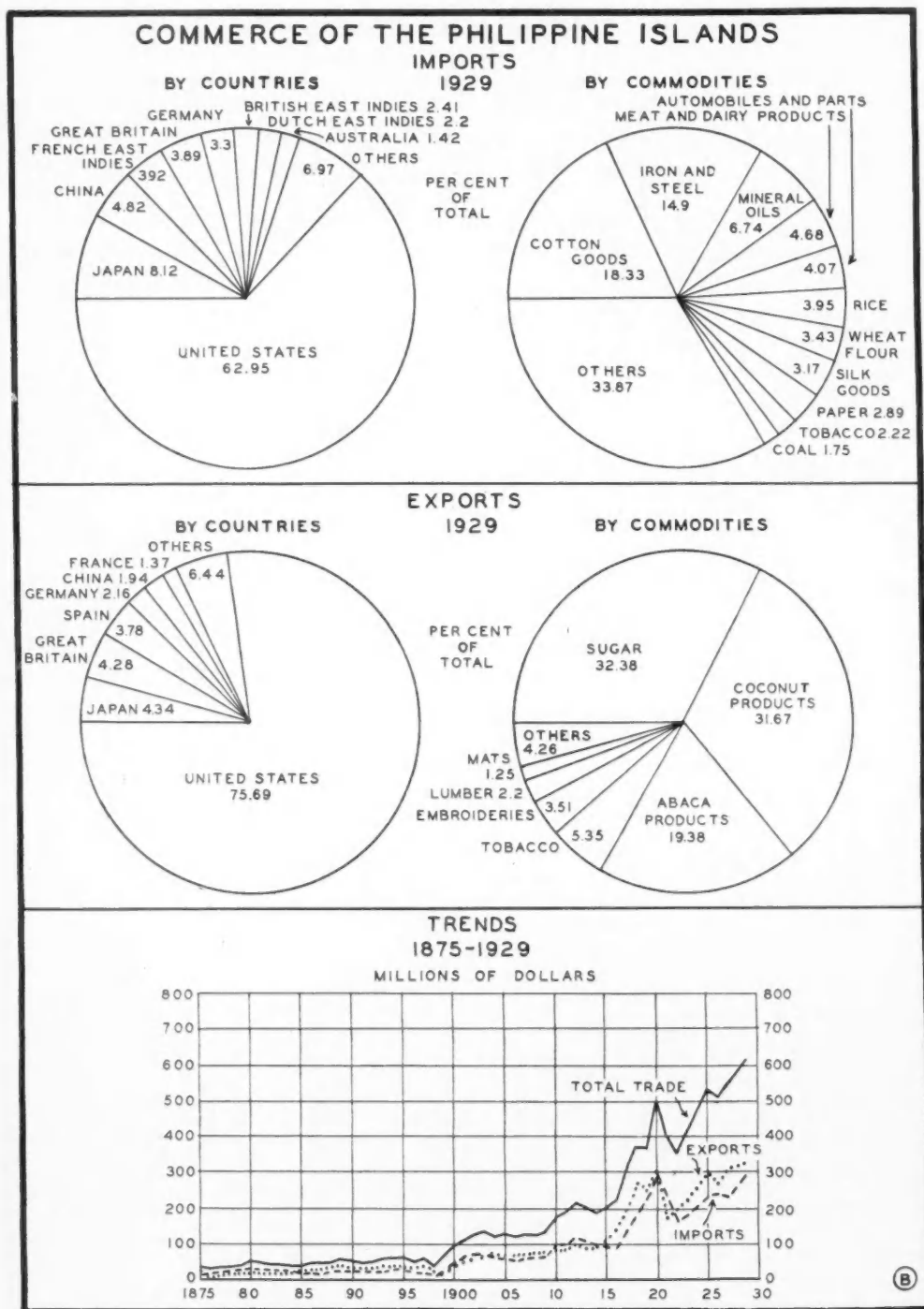


FIGURE 2.—The importance of the Philippines and the United States, each to the other, is clearly brought out by the imports from, and the exports to, the United States by the Philippines. International trade rose immediately upon the acquisition of the islands by the United States.

serious matter, the full significance of which cannot be grasped by people who have not been on the ground.

Third, its commercial position alluded to above, the full importance of which could not be foreseen in 1898, but which is now being realized, as the growth of trade in that part of the world is read from the figures now available.

To anyone having any knowledge of Manila before 1898 the size, magnificence, and progressiveness of the modern Manila reads like a fairy tale. Today Manila wields an influence in the Far East not equalled perhaps by Hongkong, Shanghai, or Tokyo, and only a little over a quarter of a century has passed in which Manila has changed from "The Hell Hole of the Orient" to the present pleasing, healthy emporium it is today.

FACTORS UNFAVORABLE FOR INDEPENDENCE

CLIMATE

The people of the Philippines enjoy a climate which, while not stimulating, is equable and, for many months

of the year, even delightful. The climate has been misnamed monsoon. Though it resembles a monsoon climate, it is not exactly that, but a combination of shifting trade winds (northeast) and southwest cyclones, which alternate so regularly as to act like the monsoons. In this climate there is a relatively high mean annual temperature, high humidity, torrential rainfall, typhoons and, at certain seasons, a depressingly low barometer. Add to these items the deleterious effects of tropical light, with the result that there are some serious handicaps to occupancy.

Some years ago Dr. Woodruff, Contract Surgeon, United States Army, made a study in the Philippines of the effects of tropical light on white soldiers and reached some very positive conclusions, some of which appear to be well supported, while others have been questioned. Whether or not his thesis can be fully accepted, it has nevertheless been found that tropical light tends to produce a nervous instability, the full import of which has not been widely recognized. In the absence of com-



FIGURE 3.—Under present conditions the Philippine National Coal Company, operating in the Butong District on Mindanao, finds competition with Japanese, Australian, Indo-Chinese, and Indian coal too keen and has shut down its operations.

plete studies on this subject, this factor must not be over-emphasized. All these climatic factors work to lower the energy of peoples who have to live the year round under such conditions. Much of the alleged laziness attributed to Filipinos is not justified, but their lowered vitality and energy is very real and should not be disregarded. The prevalence

have been very greatly interested in Philippine mineral deposits. It is further known to government officials that steps were taken in years past to prevent the Japanese from obtaining important mineral concessions in the islands. The Japanese eventually will have to go somewhere. If they cannot go into China, California, nor Australia, where can they go? For



FIGURE 4.—Oil and natural gas accumulations are known to exist on some of the islands but the lack of demand has prevented their exploitation. This was the first derrick of the Richmond Petroleum Company on Bondoc Peninsula in southeast Luzon.

of hookworm throughout many parts of the archipelago, of course, aggravates the situation. While excused, these facts cannot be ignored, argue and juggle them as you will.

AREAS FOR EXPANSION

The Philippine people are surrounded on all sides, except the east, by highly energized peoples whose lands have reached such a degree of saturation that they must expand, and who *will* expand at the first opportunity, as Japanese occupancy of Manchuria clearly indicates.

It has been claimed that the Japanese do not wish to, and could not live in the Philippines. It is a fact that they can and do live there, and would go to the Philippine Islands in greater numbers if given a fair field. It is also a fact that the Japanese

at a time, of course, Manchuria will keep them satisfied, but there is no assurance that they will be allowed to remain there. Of course, they, like any other people, will do the inevitable thing, take the line of least resistance, and go south whether it is altogether to their liking or not. At the present time approximately 8,000 are in the Philippines, the majority of whom are in the Davao district of Mindanao. It is not right to criticize the Japanese for wanting to expand. They are doing the natural thing.

CULTURAL BARRIERS

There are certain political, intellectual, and religious obstacles at the present time that cannot be ignored with impunity and which may be considered briefly.



FIGURE 5.—The famous Benguet Consolidated Gold Company's property is located near these old Igorot gold workings in Benguet Mountain Province, Luzon.

The outstanding political consideration here, because it is fundamental, is the physical structure of this region. The fact that the Philippines are an archipelago is of paramount significance. An archipelago makes for political weakness. If the reader doubts this, let him reread the history of Greece where, in spite of a high intellectual level, that archipelago was torn by strife, internal and otherwise, many, many times in its struggle for independence and security. With about 7,000 islands (nobody knows definitely how many except, perhaps, the United States Coast and Geodetic Survey) political unity in the Philippines is difficult.

The intellectual barriers, though being rapidly overcome, are still real. The Philippine people belong to 43 ethnic groups and speak 87 different dialects, there being eight dominant languages. In spite of the similarity existing among these languages and dialects, it is difficult to communicate in different parts of the archipelago.

In addition to this is the barrier of class, the matter of literacy, and the reading of newspapers. Although the literacy in the Philippines is rela-

tively high for the Far East, about fifty per cent, it is still low enough to make this a matter to be given serious attention. In this connection let it be said that the Filipinos have probably made greater progress in this direction than any other people in the same length of time. This statement is supported by the recent educational survey by Professor Monroe, of Columbia University.

It is generally known that the Filipinos are dominantly Christian (in fact the largest body of Christian Malays) and belong in the main to the Roman Church. Nevertheless, there are three or four elements in the religious situation that have been and will continue to be disturbing, though not all of them are serious.

What with the Mindanao Moros who are Moslems, the Aglipayanos, a renegade branch of Catholicism, the fast increasing Protestant sects, the pagan groups in the mountainous areas, and the widespread superstitious beliefs even among those adhering to the regular religious denominations, further trouble can be looked for at any time. He who tries to ignore this religious set-up and pass it off with a gesture, either deliberately shuts his eyes to reality or is ignorant of the situation. These ob-



FIGURE 6.—Not far from the southeastern part of Luzon on the island of Masbate is this mill for the reduction of gold ore, the property of the Syndicate Mining Company.



FIGURE 7.—Besides shaft and drift mines, much gold has been secured from placer deposits by means of dredges, such as this Paracale dredge operating in the old Ambos Camarines Province. Wood is still used for fuel.

stacles which have just been enumerated are not insurmountable, but they do demand careful consideration. Also, they demand time for their removal.

ECONOMIC FACTORS

In a scrutiny of the economic factors, more positive statements can be made.

In the first place, the economic development of these islands is only a fraction of the potential development, and it is fairly definitely known why this is so, to which further reference will be given in later paragraphs.

Lyman P. Hammond, vice-president of the Electric Bond and Share Company of New York, who made a survey of Philippine economic conditions for Governor-General Stim-

son in 1928 said on one phase of this question:

"I find that the total production of precious and base metals in the Philippine Islands contributes less than one-half of one per cent of the value of all production. . . ."

The Mining Division, between 1905 and 1913 made a comprehensive survey of the basic substances of coal, iron, and oil in the archipelago and, as a result, the following rather positive statements can be made:

1. There is an abundance of coal of sub-bituminous quality on many islands.
2. The geological conditions in the coal fields call for the highest engineering skill for the exploitation of these seams.
3. Technical skill for this work, on

a large scale, is not now available in the Islands.

4. Filipino labor, while excellent in agricultural work and even in some gold mining operations, has not been found well adapted to coal mining. Chinese labor, successfully employed in Borneo in coal mining, is not permitted to enter the Philippine fields.

5. Coal mining, on a large scale, to date in the archipelago has been a failure.

6. Philippine coal mining has had and will continue to meet competition with Japanese, Australian, Indo-Chinese, and Indian coal and under present conditions cannot stand up against it. The Philippine National Coal Company was a complete failure and has been closed down.

Vast quantities of lateritic deposits of iron ore somewhat like the Celebes and the Nipe Bay (Cuban) deposits exist. Metallurgical difficulties will have to be overcome, which, under present conditions, cannot be done economically. Outsiders who would and could accomplish this have received no encouragement and so the industry languishes.

There are potential oil and gas accumulations in the archipelago, but so far no one has been able to develop them. The recent attempts to do so by the Standard Oil Company were not conclusive as only one prospective field was tested. In all of these attempts the Filipinos played little part and it is not likely that they will succeed where the Standard Oil Company did not.

One of the richest, if not the richest, gold mines anywhere around the Pacific Basin is that one owned by the Benguet Consolidated Company, operating in the Mountain Province of Luzon. This is an American company, has paid dividends as high as

fifty per cent, and has recovered millions since 1913. With an acute gold shortage in certain countries today, the importance of the Benguet gold field in the Philippines becomes apparent. Any unprotected gold field in such times as these would only be an invitation to some freebooters to cause international trouble. The writer knows not of a single successful gold mine of any size owned and operated by Filipinos. It must be said, however, that the Ilocano laborers in the Benguet Consolidated mine have proved highly efficient miners (under constant, expert, white supervision). Gold is rather widespread in the archipelago and other successful mines could be developed.

A large deposit of enargite copper was worked fitfully in Spanish times in the Mancayan district of northern Luzon, but today lies idle in spite of attempts of outsiders to get concessions.

If the United States moved out of the Philippines today and all Americans left their interests, which they might have to do sooner or later, there would in a year's time be no mining activity worthy of mention. The Philippine people are not and never have been miners in the usually accepted meaning of the term. To attempt to make miners out of the rank and file of Filipino farmers is about as difficult, and even less likely to succeed, as the metamorphosis of the Russian peasant to an industrialist. Without a dependable mining industry where would an independent Philippine nation finally land?

AGRICULTURAL PRODUCTS

Here the story is more encouraging. The Filipinos are more given to agriculture than to mining and have had a great part in its development.



FIGURE 8.—The old Mancayan copper mine in north central Luzon was worked even in early Spanish times. Its rich deposits of enargite ore have attracted many outside interests, but concessions have not been granted to any one.

Practically all large scale operations in this field, however, have come about under the supervision of either Spaniards or Americans, and at times in spite of obstacles placed by Filipino officials, chiefly in the case of rubber.

The development in the sugar industry has been most gratifying as one may readily see by scanning the figures in Table III.

TABLE III
SUGAR PRODUCTION IN THE PHILIPPINE ISLANDS †
(In thousands of short tons)

Yearly average for year beginning July 1:	
1870-1874.....	111
1874-1879.....	152
1880-1884.....	195
1885-1889.....	196
1890-1894.....	266
1895-1899.....	174
1900-1904.....	94
1905-1909.....	141
1910-1914.....	309
1915-1919.....	447
1920-1924.....	585
1925.....	607
1926.....	766
1927.....	808
1928.....	830*
1929.....	853*

* Unofficial estimate of commercial crop.

† From U. S. Commerce Yearbook, 1930.

This industry is centralized in two distinct regions, Laguna Province of

Luzon and the Island of Negros. Hawaiian-American capital and technical skill largely dominate this industry, though some Filipino capitalists and technical men have taken a commendable part in the business.

One thing needs to be said here on the political aspect of this industry. Some of the recent support for independence has come from Americans in the United States who are in the sugar business, both cane and beet, who either want a further restriction on the entry of Philippine sugar, or failing in that, complete independence which would subject all products coming from the Islands to the United States tariff. It was to be hoped that this particular argument would not get any hearing from Congress. When the Filipinos have been repeatedly informed that they must first become economically independent before they can hope for political independence, to hamstringing one of their most successful industries would be a particularly flagrant piece of bad faith on the part of the United States.

Of the world's first quality hemp, the Philippines have a virtual monopoly. There is not much to fear with respect to the future of this industry. This plant was probably introduced into the Philippines by Spanish friars and has been successfully grown in the archipelago for a long time. Since the American occupation, however, both its uses and preparation for the market have been greatly improved.

The copra and coconut oil business bids fair to become the great revenue producer of the archipelago. It has been enormously stimulated since Americans took a hand in it and the American market is a rapidly growing one. Coconuts can be grown in the

lowland areas from one end of the archipelago to the other. The industry is adapted to both plantation operations and small scale production by peasants who have only a few trees. Word has recently been spread that the people of Ceylon favor immediate independence of the Philippines so that Philippine copra would be obliged to face the United States tariff as does copra from Ceylon. "Pan-Asia," so it seems, is not entirely without its own ulterior motives somewhat tinged with economic considerations!

A high grade of tobacco is grown in many parts of the islands, but the best comes from Isabela Province in the extreme northeastern part of Luzon in the famous Cagayan Valley. At present its expansion is restricted by the discrimination which American tobacco interests in the United States have prevailed upon Congress to place upon it. If it were not for this discrimination Philippine to-

bacco would have no difficulty in overcoming ordinary competition. This business was established, and still is largely controlled, by Spaniards and Spanish mestizos.

Rubber is successfully grown in the Philippine Islands at present, chiefly in Mindanao and various Sulu islands, where typhoons rarely visit. The Firestone Company and the United States Department of Commerce several years ago, after exhaustive joint investigations, came to the conclusion that this important product could be produced in enormous quantities in that part of the Philippines at present comparatively idle, but Philippine land office restrictions nipped this industry in the bud. This action on the part of the Philippine Government was shortsighted in the extreme and has caused immeasurable loss to the Filipino farmer.

Although rice production in the Philippine Islands does not appear to have any especial significance in the



FIGURE 9.—A cultivated fertile valley northeast of Manila bordered by sharp fault-scarp mountains. The water main leads from the Montalban Gorge (limestone) Reservoir to Manila.

international relations of the Pacific it is the most important in percentage of total commodity production, amounting to almost 25 per cent (the highest of all) of the total for the archipelago. Even with this relatively high percentage the Philippines import great quantities from Indo-China. Only the hill people of north central Luzon, as far as the writer can learn, produce an adequate supply for their own use.

In many ways the policies with reference to the development of the Philippine forests have been much more constructive and this industry has flourished in the main. The Philippines have been particularly fortunate in having as chief foresters responsible for this development, Major Patrick Ahern and his successor, Mr. Arthur Fisher. The islands are now supplying world markets with much lumber from several varieties of fine hardwoods. Here, again, is an industry contributing less than 5 per cent of the total commercial production of the archipelago.

INDUSTRY

The character of Filipino labor has been touched upon elsewhere specifically. Furthermore, it should be stated that Filipino labor under competent supervision is, in the main, eminently satisfactory and easy to handle. Many interesting and vital points about this labor supply, such as health, efficiency, and trustworthiness might be brought out here, but will have to be omitted in this paper.

The one great lack in the Philippines at present is adequate capital for large scale enterprises and this will never be forthcoming until political stability is guaranteed. Some business men like to "fish in troubled waters," but hard-headed industrial-



FIGURE 10.—Wood from the forests is cut and split for the market into sticks selling at one centavo (one-half cent) each.

ists will not run the risk. There are enough typhoons, locusts, disease, floods, and other handicaps without incurring the additional and more serious ones of uncertain government.

The Filipinos as a people (individually there are gratifying exceptions) lack both technical knowledge and organizing ability to enable them to play the part that they might in the development of their magnificent resources. It will require time to develop these special skills in them, but it can be done and is being done. If independence were given them now, much of this activity would slump. With the example of Russia floundering around because of this same lack, one would be foolish to think the Filipinos could do any better without long apprenticeship.

THE LAND PROBLEM

Unlike Mexico and some of the countries of South America where

Spanish rule was responsible for policies which today are causing serious trouble, the Philippine Islands have no such serious land problems to face. On the other hand, there are large areas in several parts of the archipelago where good land is crying for occupants. This is particularly true in central Mindanao, where one can ride for many hours over excellent land with scarcely a human habitation in sight.

In the graph it can be seen just how the Philippine land is utilized at

public domain. At present only about 21 per cent of the land suitable for cultivation is being used. While from the absolute standpoint this percentage is low, it is high in comparison with certain undeveloped countries. Thus, only about 5 per cent of the land in South Africa and Kenya, already alienated or surveyed, is under cultivation.

"Although there are about 29,500,000 acres of public land available for alienation, only 77,800 acres on the average are being alienated or



FIGURE 11.—Little of the native iron ore is used in this Manila foundry, yet the market for iron and steel products in the Far East seems to warrant the exploitation of the islands' deposits.

present (Figure 12). On this subject Buell says:

"A fundamental factor in the economic development of the Philippines is the land situation. The total area of the soil cover of the Philippines is about 72,000,000 acres. More than 25,000,000 acres are forest land, and about 9,000,000 acres are already under cultivation. There remain about 34,500,000 acres of vacant cultivable land, all belonging to the

leased annually. These figures indicate that 'nearly 400 years must elapse at the present rate of development before the Philippine Islands are cultivating all the land that can be cultivated here.'"

In the early days it was necessary for the American Government, through the fine diplomacy of Governor-General Taft, to straighten out the so-called Friar Land Question in the northern islands, and as a result,

some 410,000 acres, formerly in great estates, are available for subdivision into small farms. Although some of the religious orders did get hold of some great tracts of choice land, this never became the serious problem it was in the countries named above. Today the problem is rather that of getting someone to go on to the land; and, of course, large unoccupied tracts of fertile land are *always* an invitation to neighboring land-hungry peoples. So, this aspect of the land question is one which cannot be left out of any serious discussion concerning independence.

In passing, a suggestion should be made to those interests seeking large concessions of land in the Philippines. It has been understood that Mr. Firestone went into Liberia because he could not secure sufficient acreage in the Philippines. It does not seem necessary for such concerns to hold large acreages. Let the Filipino farmer, under supervision of the company, hold the acreage and sell his latex to the company just as farmers in the United States sell milk to a central creamery. Coöperative arrangements of this kind would benefit all concerned and remove the fear, or at least take the force out of the arguments of those who are constantly talking about "economic slavery to the foreign capitalist." Though the United States was developed largely by foreign capital, much of it British at that, yet the United States is not an economic slave to England.

SCIENTIFIC WORK IN THE PHILIPPINES BEARING UPON ECONOMIC PROBLEMS

The type of work in pure science now being carried on in the islands, is outlined briefly below.

Aside from the more "practical" or applied work carried on by such bureaus as Forestry, Coast Survey, and Health, three institutions, Bureau of Science, University of the Philippines, and the Philippine Research Institute are carrying on investigations of a fundamental nature of immense importance to the general and economic life of the archipelago. In much of this work well-trained Filipinos are contributing an increasing proportion of high-class material but most of it is done under either direct or indirect American supervision. Some of this work would probably be neglected if the United States withdrew at this time from that field. Certain individual Filipinos of travel and experience would, of course, support this as well as does the United States, but many of their political leaders do not know enough about pure science to fully appreciate this sort of thing; nor do a certain type of so-called "practical" Americans. This statement is clearly borne out by the lack of understanding on the part of many people of what the late Dean C. Worcester accomplished during his incumbency as Secretary of the Interior. Much of his work was carried on against tremendous opposition, partly because of certain personal characteristics of the man, it is true, but largely owing to lack of knowledge and appreciation of the work of the scientist.

The work of Merrill in the systematic botany of the islands was far-reaching and of very great significance. Seale's and Herre's work on the fish of the archipelago will be of lasting importance. The work in ethnology, little understood and badly curtailed through a false sense of pride, was absolutely indispensable to a wise program of administration

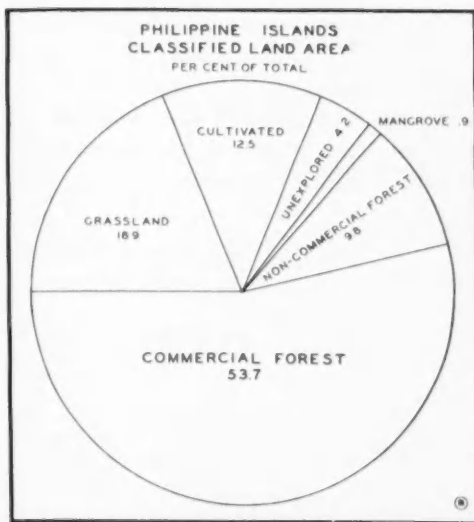


FIGURE 12.—About one-fifth of the cultivable land is now under cultivation. Vast areas of grassland are available for development should the population increase and the demand for more food products rise. One can also see, in the future, the importance that the Philippines will hold in the timber market of the Far East.

of the so-called "Wild Tribes." R. E. Dickerson's symposium on "Distribution of Life in the Philippines" is another fundamental study of considerable importance. The work under Strong in biology, and others in geology, may be mentioned but space does not permit the illustrations that might be brought forth in these lines of investigation. In the unfortunate period of 1913 to 1920 when there was a political reversal in the Philippines, certain native politicians desired to have a Filipino director named for the important Bureau of Science, but this was opposed, by *Filipino* workers in that Bureau who feared the consequences.

HINDRANCES TO THE SOLUTION OF THE PHILIPPINE PROBLEM

The American political system, which has unwittingly made a political football of the Philippines, is the chief obstacle to the solution of the

Philippine problem. Get the Philippines out of American politics and half the trouble will cease. Something like a colonial office is needed to handle these possessions and men who have been trained in the field, such as ex-Governor William Cameron Forbes, are needed to take charge of these territories. There are all too many men in some of these offices whose only qualifications for receiving appointments are political.

The uninformed, overly-sentimental attitude of Americans at home makes it difficult to administer these matters wisely. This can be overcome only by education of the people in the United States.

The constant agitation on the part of some native politicians is a very disturbing element in the whole question. This will probably never cease.

The most serious obstacle, and a very real one, is the one of race and color prejudice. It is to be questioned, in spite of much evidence which seems to refute it in the case of Britain and her subject races, whether any Anglo-Saxon peoples can ever successfully deal with a Malay people. "Between us," in the words of a Spanish priest who had worked in the Philippines for years (he referred to Spaniards as well as Anglo-Saxons), "there is an abysmo." There is no suggestion here, of inferiority of the Malay. It simply implies a profound racial difference.

This very fact of racial incompatibility, of course, can be used as a very strong argument for turning the Philippines loose. Be that as it may, the task now ahead of quietly, consistently, coöperatively working toward a lasting solution is badly complicated by this hideous, and hard to overcome, racial feeling. Impatient, radical, and unscrupulous persons on

both sides deliberately capitalize these misunderstandings in order to promote personal interests.

A POSSIBLE WAY OUT

Two things may be considered as certainties: First, the United States cannot go backward and reverse her policy. There are those who would like to do so and their reasons, therefore, are sincere and obvious, but they are too selfish to influence America. Second, the *status quo* is decidedly bad. There are many reasons for this, but the most important one is neither of a business nor of a political nature,—it is social. Ninety-nine per cent of the present feeling between the two peoples may be attributed to the question of color. The Filipino today is not oppressed politically. On the contrary, he is pampered in this respect. He has been given, in only a quarter of a century what other peoples have fought centuries to attain. And as for business, he has been benefited a thousand-fold by the invasion of the foreign business man. He has comforts, yea luxuries, he would never have gained for himself perhaps in a thousand years. The proof of this is his own past. Practically every single important progressive step in the country is due to foreign initiative (to which he, of course, has contributed with his labor).

But the existence of the *color* line, for which the Anglo-Saxons are to blame, galls him and goes to his inmost soul. For this white men, and more, white women, are to blame. That there is or is not good reason for this is not asserted, nor should the Anglo-Saxons be taken to task for something which is ingrained in them. This fact is as positive as any geological facts about these islands.

The Filipinos want the United States out of their land because of this thing more than anything else. Granted that this is so, what shall the United States do? Has the time now arrived? For complete severance of all ties, no!

The Wood-Forbes report, perhaps the most searching inventory ever made of one people by another, says no, and it is felt that that report is eminently sane, just, and very defi-

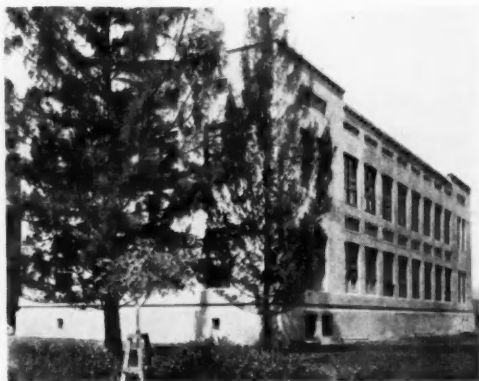


FIGURE 13.—The home of the Division of Mines of the Bureau of Science, one of the three institutions carrying on fundamental investigations leading to economic development of the archipelago.

nite. Well, then, what may be suggested? Qualified independence? YES.

The United States should be able to do the following:

1. Establish a protectorate over the Islands.
2. Give the Filipinos complete internal autonomy over all that part that ever belonged to them, that is, all except Mindanao and Sulu. Neither the Spaniards nor the Filipinos ever had any real control over these regions.
3. Appoint a native Governor-General. The President of the United States has the ultimate veto under any circumstances.

4. Establish a system of American advisers (something on the order of the British Residents) particularly in (1) Finance, (2) Customs, (3) Forestry, (4) Mining, (5) Education, (6) Health, (7) Science, and (8) Agriculture.

5. Allow present American office-



FIGURE 14.—The instability of the Pacific fringe, of which the Philippines are a part, is a constant menace to the welfare of the Filipinos, the fear and dread causing insanity in many cases. An example of the disastrous effects to buildings is evident here in Tayabas Province, Luzon.

holders to serve out their life term with one-half pay pension when superannuated. This is only fair, it is the only decent thing to do.

6. Establish an American naval and commercial base in Pollok Bay, Mindanao, which is far better, in the writer's opinion, than either Olon-gapo, Cavite, Manila, or any other place in Luzon. Mindanao with her extensive coal and iron deposits could and should be developed by Americans. A minimum of three million tons of semi-anthracite has been

proved by the diamond drill on Sibuguey Peninsula, which the United States Navy could use if it would, and in addition, it would be very easy to maintain a large amount of oil in storage from the nearby Borneo fields.

7. Reciprocal free trade relations should be guaranteed between the independent part of the group and the United States and preferential rights insured to American business men who have already established themselves in the Philippines.

8. Establish an American Consul-General in Manila and vice-Consuls in each of the following open ports: Cebu, Iloilo, and Legaspi.

CONCLUSION

Although one may be disposed, upon purely sentimental and racial grounds, and also considering the admitted military weakness of the position of the United States in the Philippines, to give them up, it is evident that grave weaknesses exist in the situation which would jeopardize the welfare of the Philippine people were this course to be taken. The reasons for this conclusion are mainly *geographical* and *economic* and by way of summary may be listed as follows:

1. The general world conditions at this time indicate that the United States has enough to do to stabilize what she has without adding another element of weakness and trouble.

2. The strategic position of the archipelago in Pacific affairs.

3. The near-explosive political situation in the Far East which the United States can do much to quiet.

4. The economic unpreparedness of the Filipino people.

5. The commerce of both the United States and the Philippines

would be seriously impaired by a complete severance of political ties.

6. The interests of the United States in an entrepôt, like the Philippines, to the markets of Asia.

7. Need by the United States for unrestricted supplies of tropical raw materials such as rubber, hemp, and copra.

8. The lack of political, intellectual, and religious unity in the archipelago.

9. The financial inability of an independent Philippine state to protect itself in the absence of certain security from an emasculated League of Nations or any other type of world political organization now in existence.

10. And finally, because of the moral responsibility, to see a job well-begun carried through to a successful conclusion.

BOOK REVIEWS

UNITED STATES DEPARTMENT OF COMMERCE
BUREAU OF FOREIGN AND DOMESTIC COMMERCE
Foreign Tariffs and Commercial Policies During 1932. By Harry Chalmers. Trade Information Bulletin No. 812. Price, 5 cents.

Particularly during this period of disturbance in the conditions of international trading is it important to have a clear understanding of the current developments and trends in the tariffs and other trade-control measures of foreign countries. To meet the many requests for such information this review was prepared.

Retail Credit Survey, July-December, 1932. Domestic Commerce Series No. 83. Price, 5 cents.

To promote sound credit management through research and education is one of the main objects of the credit studies made by the Department of Commerce. The period of reconstruction will bring profound changes in business; no one can predict the credit developments of the next few years. Reliable factual information is needed as the only guide to the new and different problems which business men will be called upon to face.

The European Chemical Industry in 1932. By C. C. Concannon. Trade Information Bulletin No. 813. Price, 10 cents.

Recovery of world conditions is intimately associated with recovery in foreign trade. Because of this fact and because the chemical industry is a basic industry, a review of the chemical situation in Europe is particularly appropriate at this time. This review covers 22 European countries.

The Balance of International Payments of the United States in 1932. (Including Summary Tables, 1919-32.) By Amos E. Taylor. Trade Information Bulletin No. 814. Price, 10 cents.

A nation's balance of international payments may be briefly defined as an itemized account of the commercial and financial transactions conducted, within a stated period of time, by all the people of the nation with the people of all other nations. It may be viewed as a kind of income statement showing a nation's income and outgo—from what sources the nation derives its income abroad and how that income is spent or invested; for what purposes payments are made abroad and by what means claims held by foreigners are met.

Foreign Markets for Cooperage. Trade Promotion Series No. 144. Price, 10 cents.

Exports of cooperage materials from the United States for the years 1927 to 1931 amounted to

nearly 25 per cent of the total value of exports of all wood manufactures exclusive of logs, sawn timber, and lumber.

The Monetary Use of Silver in 1933. By Herbert M. Bratter. Trade Promotion Series No. 149. Price, 10 cents.

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MILDRED R. BASHORE

GILBERT, E. W. *The Exploration of Western America—1800-1850.* 233 pages; well illustrated, contains three maps showing the routes of the principal explorers. Cambridge, 1933. Price, \$3.25.

Considering the fact that "The Exploration of Western America" was written entirely from manuscript sources, by a man who has never visited the region under discussion, it is impossible not to acknowledge its rather unusual merit.

Mr. Gilbert has not unearthed any new material, nor has he added to the sum of knowledge of the students of the historical geography of western America. However, he has, as far as I have been able to ascertain, brought together for the first time a concise, connected narrative of all the major explorations of the western United States during the first half of the nineteenth century. Much value is added to the narrative by a careful arrangement of its contents. An introductory section deals with the early exploration of western America, and the purchase of Louisiana, the key to the Great West. Part I deals with a geographical analysis of the climate, drainage, physical contour, animals, and inhabitants of the region. After laying the basis for his work in this portion, the author proceeds with a detailed account of the discovery of the northern, southern, and central transcontinental routes. The material in this book is unusually well organized, and presented to the reader in a clear, concise, well-ordered arrangement.

The book makes no pretense of being a historical narrative of western exploration. Rather it is a commentary upon the geographic factors influencing westward expansion. It is an attempt to "reconstruct the geographical setting in which the explorers accomplished their work," to quote the words of the author, and the historical background of their task is mentioned only incidentally.

Another commendable feature of this book is the wealth of documentary evidence brought forward to sustain statements of fact. Very well documented, it is obviously the product of a great amount of careful painstaking research. All significant published accounts, and the journals of explorers, important and not so important, have been scanned to bring the material together.

Although not perhaps an outstanding contribution to its field, the book is well worth reading. It condenses, clearly and definitely, such important information hitherto unavailable except in scattered sources. Any careful student, consulting the references indicated in the footnotes and the bibliographical index, would certainly obtain a wealth of knowledge concerning the westward expansion of the United States. Even though it is compiled entirely from manuscript sources, by a Briton unacquainted personally with the western United States, it is a book of much worth—both to the student of geography and history.

HERSCHEL HEATH

SEMPLE, ELLEN CHURCHILL, AND JONES, CLARENCE FIELDEN. *American History and its Geographic Conditions* (Revised Edition). 541 pp., maps, bibliography, and index.

Houghton Mifflin Co., New York, 1933. Price, \$3.00.

JONES, CLARENCE FIELDEN. *Manual to Accompany American History and Its Geographic Conditions*. 40 pp, guide questions and 45 illustrative maps for student use. Houghton Mifflin Co., New York. Price, \$1.15.

Almost to the day of her death Miss Semple labored with all her waning strength and indomitable courage to complete the revision of her famous presentation of the influences of geographic conditions in shaping the course of American history; and always at her side Doctor Jones, one of her protégés and best-beloved students, toiled patiently and affectionately to help her. The revision stands, not only as a memorial to Miss Semple's illustrious career as a scholar and investigator, but as a testimonial to a comradeship in research and a personal friendship and loyalty that continued firm and faithful to the end and that is all too rare in academic life. Jointly they toiled, and jointly they achieved.

Miss Semple improved, elaborated, and clarified much of the original text. In the thirty years that elapsed between the issue of the first edition in 1903 and the revised edition in 1933, she assembled and carefully evaluated a tremendous mass of material that related to her thesis; and the valuable and most significant part of this material she added to the text of her first edition or applied it to the reinterpretation of her earlier principles. The results of the many years of mature research and exhaustive investigation she embodied in her revision. Her keen, logical mind and her sterling integrity of research and style she retained until she completed her part in the revision.

Doctor Jones relieved Miss Semple of the drudgery of detail in organization and preparation, thus enabling her to complete her task while still her skill and ability remained unimpaired. He sustained and encouraged her when the task grew difficult and the burden heavy. But in addition to all this help to her part, he contributed as his own part a new and invaluable addition to her earlier edition by his thorough and painstaking investigation of the economic factors and phases of the subject. The presentation of the economic data and their interpretation in the light of history constitutes the most significant addition to the original volume.

The book itself remains, as it was once characterized, "a pioneer work and still preëminent in its field." None other has so clearly portrayed the part the geographic environment has played in the drama of America's rise to preëminence in the fields of human activity; none other has so powerfully presented the relation of the land and its physical characteristics to the evolution of America's policies and institutions; none other has so logically and convincingly explained the reasons why America so rapidly became a world power.

The book presents a wealth of geographic, economic, and historical factual material, grist for a hundred mills to grind in the future. Exhaustive and complete as the treatment is, each chapter merely opens the gate to fields where research may yield productively for many years to come. American history, economics, and particularly geography, are immeasurably enriched by the contribution that this book makes to each field; no student of American life, its activities and attributes, can ignore this important book, and be well informed.

The list of supplementary readings which the book contains, though making no pretence to completeness, and the list of literary references as well, indicate how rich is the field to which the book is but the gateway. They form a most valuable addition to the revised edition.

Both as a school text book and as a reference work in the personal library the revised edition of this splendid publication is indispensable. It will stand, as has the original, for decades as the authoritative source, and the fundamental basis, for all research in this field. Because it fills a need that no other book does, it should surely meet a heavy sale.

The publishers have excelled themselves in the paper, the print, the binding. The geographer will feel the need of more maps and more explanatory charts and pertinent illustrations, but in the present time of economic stress and difficulty the cost of preparation must not exceed the buying power of those who need and must use the book.

It is not too much to say that the issue of the revised edition of "American History and its Geographic Conditions" forms one of the landmarks of the year in educational publication.

The attractive manual to accompany the book, is, like the book itself, indispensable, though its greatest value is for the teacher and the student. To them it is like the approach to a house, the only way by which they may enter into the delights and comforts and full appreciation of the house itself. It is worth many times the price asked for it.

W. ELMER EKBLAW

HUNTINGTON, ELLSWORTH, WILLIAMS, FRANK E., AND VAN VALKENBURG, SAMUEL. *Economic and Social Geography*. 630 pp., many maps, charts, and graphs. John Wiley and Sons, New York, 1933. Price \$3.75.

Three distinguished geographers have collaborated in this important text book, one of the most notable contributions to the subject of advanced geography in America in the past decade. The senior author, who is known the world over for his studies of the effect of climate upon man and his activities, has planned and prepared the greater part of the book, and placed the stamp of his enthusiasm for research into the effects of climate upon every part. The junior authors have contributed important portions of the text and have advised and counseled with the senior

author over all the material, helping shape and adapt the book to its use by students in the classroom as well as to its value as a reference.

A notable feature of the book is the minor emphasis it places upon regions. Only 100 pages of the 630, not quite one-sixth, are devoted to the four chapters of Part 2, dealing with "A Survey of Natural Regions," whereas 230 pages are devoted to the eleven chapters of Part 1, dealing with "Geographic Factors and Principles"; 155 to the seven chapters of Part 3, dealing with "The World's Great Products"; and 128 to the five chapters of Part 4, dealing with "Industry and Commerce."

Agriculture is not included as an industry nor is the geography of agriculture *per se* treated in the book; except as it is discussed incidental to the production of crops and stock, or to the effect of some physical factor like climate, relief, or soil. Whether or not such a plan is best, depends probably upon the purpose to which the text is put, but it would seem that in a book devoted to the economic and social phases of geography, agriculture should merit more specific treatment, and would contribute more to the richer interpretation of man's life and culture in the terms of his environment than do some of the other "industries."

Likewise but little space is devoted to fish and fisheries. It probably is true that the economic value of fisheries is relatively unimportant, as the book states, but certainly their geographic significance in the interpretation of life in Japan, in Norway, along the Atlantic coast of America, or the North Sea coasts of Europe, and along the rivers and seas of Russia, for example, warrants somewhat more than the 3 pages accorded them.

These, however, are relatively trivial adverse criticisms compared with the enthusiastic approval that the book deserves for its originality and breadth of view, its charming style, and its novel points of view. Every chapter is rich in new material or in new applications and interpretations of old facts; there is nothing dull nor

conventional anywhere in the book. All too frequently we take weather and climate for granted, and ignore or grossly underestimate their profound effect upon the course of history, the development of culture, and the welfare and activities of people. This book is built around the fact that the effect of climate is the dominating agency in laying the course of man's evolution and progress in any locality, and for this reason has a most distinctive and necessary place in the education of children in the affairs of the people of the whole world. Even though, as Mark Twain once said, we do nothing about weather, it still remains a chief topic of daily conversation, and still continues to make climate.

Particularly interesting and stimulating are the illuminating discussions of climatic and other limits and optima and their significance in the interpretation of the distributions of human and other populations, the locations of crops and industries, and the varying effectiveness of man's efforts, insect infestations, disease incidence, and other phenomena of number and place. Most persons are wholly ignorant of the subject of optima and limits; if this book serves to enlighten the next generation on this one point it will have achieved a most praiseworthy success.

The final judgment of the value of this book will lie with the teachers and students who use it; the reviewer can but state that it is stimulating and interesting; that it presents in a new and attractive way a wealth of material that has hitherto suffered from dullness and lack of interpretative skill; that it is thorough to exhaustiveness, and inclusive to encyclopedic treatment of some parts, particularly Part 3; that it emphasizes a point of view that should never be, but often is, neglected; that it is bound excellently, and printed in clear type on superior paper; that it is pertinently illustrated by an abundance of maps and charts; that it is, on the whole, a credit to the geographer's field and profession. It is an excellent book, well done from every point of approach.

W. ELMER EKBLOW

ANNOUNCEMENT

THE series on the *Agricultural Regions of the World* will be continued in the October issue with an installment of *Agricultural Regions of North America* by Dr. O. E. Baker. Another installment of *Agricultural Regions of Asia* on China by Dr. George B. Cressey, will appear in the following issue. In a later issue Dr. Homer L. Shantz, President of the University of Arizona, will contribute the first of his series on the *Agricultural Regions of Africa*, which, upon conclusion, will complete the finest geographic discussion of the world's agriculture thus far published.

To obtain the complete series of these extremely valuable articles, which present for the first time on such a comprehensive and accurate basis the significant divisions of the world's most important industry, it will be necessary to subscribe at once for ECONOMIC GEOGRAPHY, and to order the several back numbers.

In addition to this series of articles on agriculture, other series are being initiated; every issue will also contain four or five articles dealing with urban and regional geography, with problems of land utilization, with programs of development of resources, with commerce, with transportation, with health, and with the hundred and one other subjects that are of present geographic interest, all by the most competent and best-informed authorities in their respective fields. ECONOMIC GEOGRAPHY is indispensable to the intelligent citizen.

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Only a limited number of the first issues of ECONOMIC GEOGRAPHY are available.

The April Issue of Volume 9 contains the following articles:

Agricultural Regions of Asia: Part IV—India, Samuel Van Valkenburg, Clark University.
The Coast Plains of South India: Part II, Ethel Simkins, University College of the South West of England, Exeter, England.
The Balanced Economy of St. John Island, Earl Shaw, Worcester State Teachers' College, Worcester, Mass.
Agricultural Regions of North America: Part XI—The Columbia Plateau Wheat Region, Oliver E. Baker, U. S. Dept. of Agriculture.
Irrigation in South America, Dorothy Sisson, St. Louis, Mo., and R. H. Whitbeck, University of Wisconsin.

January includes:

Agricultural Regions of Asia, Samuel Van Valkenburg, Clark University.
The Coast Plains of South India, Ethel Simkins, University College of the South West of England, Exeter, England.
A Southern West Virginia Mining Community, Raymond E. Murphy, Pennsylvania State College.
The Oahu Sugar Cane Plantation, Waipahu, John Wesley Coulter, University of Hawaii.
Kilgore, Texas: An Oil Boom Town, William T. Chambers, Stephen F. Austin State Teachers College.
Where Florida Truck Crops Are Grown, John L. Wann, University of Florida.

The October issue of Volume 8 contains the following articles:

Agricultural Regions of North America, Oliver E. Baker, U. S. Dept. of Agriculture.
Nomadic Pastoral Regions, Wellington D. Jones, University of Chicago, and Derwent S. Whittlesey, Harvard University.
Pattern of Copper Mining Terrene Occupancy in the South Range, Keweenaw Peninsula, Robert S. Platt, University of Chicago.
Economic Aspects of the Danubian Plan, Joseph S. Roucek, Centenary Junior College, Hackettstown, N. J.
The North Kansas City Urban District, John Q. Adams, University of Missouri.

July includes:

The Ports of Finland, Karl Kekoni, High School, Ekenäs, Finland.
Agriculture of the Southern High Plains, J. Sullivan Gibson, Western Kentucky State Teachers College.
The Banana in Caribbean Trade, Jesse T. Palmer, University of Illinois.
Iron and Steel Industry of Wheeling, West Virginia, Langdon White, Western Reserve University.
Competing Cottons and United States Production, William G. Reed, George H. McFadden & Bro., Philadelphia, Pennsylvania.
Economic Adjustments on the Olympic Peninsula, Albert L. Seeman, University of Washington.
Wild Plant Industry of the Southern Appalachians, Ina C. Yoakley, State Teachers College, Johnson City, Tennessee.

April includes:

Agricultural Regions of Asia, Samuel Van Valkenburg, College of the City of Detroit.
Manchuria: The Land and Its Economy, John R. Stewart, National Credit Office, New York.
Export Wheat Producing Regions, Helen M. Strong, Bureau of Foreign and Domestic Commerce.
Importance of Pipe Line Transportation, John K. Rose, Clark University.
Classification of North American Climates: A Review, Stephen B. Jones, Harvard University.

January includes:

Land Utilization in the Lower Rio Grande Valley of Texas, Edwin J. Foscoe, Southern Methodist University.
Agricultural Vermont, S. Axel Anderson, Columbia University, and Florence Woodard, University of Vermont.
The Population of the Netherlands, J. F. Bogardus, University of Pennsylvania.
Coffee Industry of Central America, Louise Hearst, Iowa State Teachers College.
Edwards Plateau, A Combination Ranching Region, William T. Chambers, Stephen F. Austin, State Teachers College.
Buffalo as a Flour Milling Center, Laura O'Day, Buffalo Museum of Science.
Dry Farming in the San Joaquin, California, Samuel N. Dicken, University of Minnesota.

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ANATOLIA

THE intense nationalism of Anatolia, present-day Turkey, reflects in no small degree the character of the land left to her people. Rugged, and broken by a network of intersecting mountains into innumerable small bits of arable soil about which rise the barrier walls of steep-sloped heights, little of her land lends itself to crop agriculture, and only her tortuous river courses offer routes of reasonably easy trade and transport. Watered chiefly by the relatively sparse winter rains of her Mediterranean climate, her slopes and plateaus offer opportunity only for a grassland economy. Considerably less than a tenth of her area is arable.

Harassed on every side by unsympathetic, even antagonistic, states that have little in common with the culture of her people, and less in common ethnically, she faces almost complete isolation. The isolation of her mountain recesses and fastnesses is thus emphasized by the restricting character of her economic and cultural frontier; her people must face an inherently niggardly land and unfriendly bordering peoples. With paucity of natural resources, few avenues of contact with alien cultures by sea or by land, and a bitter history of plunder and conquest to alienate her from her neighbors, she must rely upon herself as a people to resist complete annihilation.

The Turks have set their faces resolutely toward progress in the direction of modern standards of living. Their advance must of necessity be slow and painful, but they have for inspiration to intellectual and spiritual advancement the high attainments of such progressive lands as Scotland and Scandinavia, where niggardly nature has not deterred the peoples in their ascent to cultural heights. From their intense nationalism may spring a glorious distinctive culture, the mastery of spirit and mind over difficult conditions.